

THE AUTOMOBILE

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Automobile Club in Detroit.

An Example of What May be Done in the Establishment of Comfortable Club Quarters at a Minimum of Expense to the Membership.

OF the smaller cities throughout the country in which the present number of motorists is not sufficient to warrant the expense of maintaining a club house, Detroit shows a good ex-

ample of one of the largest garages in the West. By arrangement with the owner of the garage the members can if they desire store their machines in the same building, or while in the club rooms can

having his own locker in a dressing room conveniently located close to the assembly room. The club is maintained without the expense of a costly staff of servants, and it serves present purposes ad-



INTERIOR OF MEMBERS' ROOM IN THE AUTOMOBILE CLUB OF DETROIT.

ample of what may be done in providing a meeting place, comfortable and convenient and at comparatively small cost.

The accompanying reproduction of a photograph shows the quarters of the local club. These are located in the upper

have their machines attended to down stairs. There is also a well-equipped machine shop in the building in which any needed repairs can be carried out. The club is quite informal in character. Members can come and go as they please, each

mirably without being a serious tax on the membership. The club spirit is fostered locally, and when a sufficiently large membership is reached no doubt an independent automobile club building will be figured on.

A Novelty in Steam Trucks.

Propelling Mechanism Which is Intended to Be Applied to Ordinary Horse Drawn Trucks Now Undergoing Practical Road Tests in Newark.

It is to the small experimenter, who owns his own shop and is free to carry out his own original ideas, rather than to the experimental department of the large factory, that we, in this country, have learned to look for radical innovations in

have been laid aside while the inventor and machinist has gone to work on an improved construction for putting into effect the same principle.

Such a shop is that of John C. Blevney, in Newark, N. J., who is one of the earliest

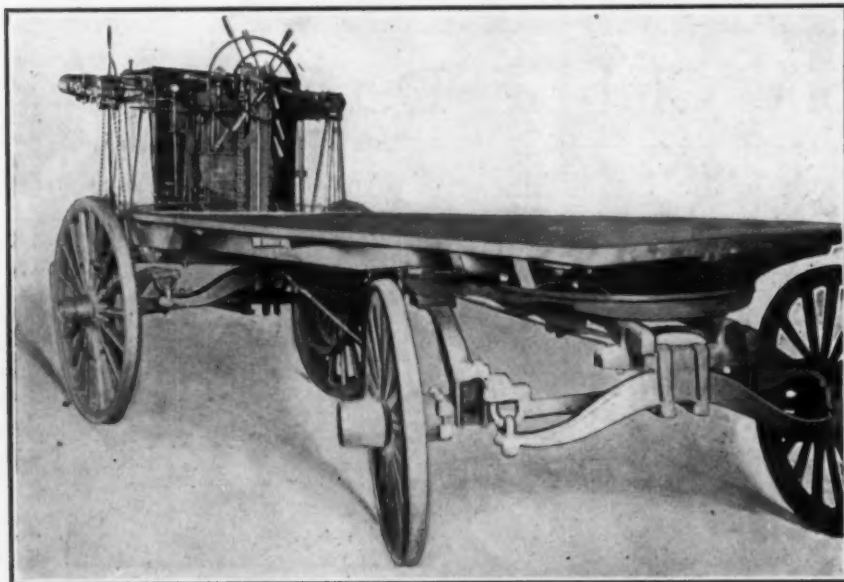


FIG. 1—Blevney Steam Truck, looking forward and showing fifth wheel and absence of machinery beneath.

the automobile line as well as in various other directions mechanical. The independent experimenter is not bound down by the limitations imposed by invested capital nor hedged about by preconceived notions as to what will and will not prove practical, both mechanically and commercially. That many freaks and "impossible" constructions originate in the small shop is admitted, but on the other hand it must be said to the credit of the inventor-proprietor that not a few, if in fact not the majority of the models of the American cars in the market were first produced in the small shops.

The independent experimenter makes large outlays of brains, time and, in comparison to his resources, money, while as a rule others reap the most benefit from his work. He takes a long chance, experimenting for years with no certainty that in the end he will bring forth anything that will meet the approval of capitalists or the public. In the unused corners and scrap heap of his shop can always be seen motors, running gears and assembled vehicles in various stages of completion that have been abandoned either as valueless or because, having proved the practicability of an idea, but developed imperfections in carrying it into effect, they

and most persistent pursuers of the elusive correct principle in automobile construction. In his machine shop can be



BUILDING IN WHICH DETROIT CLUB HAS QUARTERS—See Front Page.

seen discarded gasoline motors and the lar object in a steam truck the wagon here shown has the power plant so set upon the platform and connected up that it can

tric commercial vehicle can be kept in regular daily service by the use of extra batteries when one set needs recharging or correction of the solution or the replacement of cells. To accomplish a simple complete steam carriages with pivotally hung horizontal engines that were the direct lineal predecessors of the unique steam truck shown in the accompanying engravings from photographs taken by the staff photographer of this publication.

A horse-drawn truck, with tongue removed and provided with a complete power plant built over the rear wheels, and governing and steering mechanism so arranged that the truck moves rear end foremost—such is in brief the latest completed production from the Blevney shop, as shown in Fig. 1. The idea which Mr. Blevney desired to put into practical effect was that a commercial truck should be so designed as to be not only economical of construction, but to obviate the expensive necessity of taking the whole vehicle out of commission in case something went wrong with the engine or boiler or any essential part. To compete with horse-drawn trucks the motor truck must give constant and regular service, must do more work in a given time and must be more economical. The two latter points have already been accomplished, while the electric removed in toto in a very short time and a reserve plant substituted so that the truck can continue in commission while the motive plant is undergoing repairs. The same thing is true of the engines, the boiler and other parts, each being independently removable.

No alteration has been made in the original platform truck except the construction of an extension framework at the rear

to carry the machinery over the large wheels, the removal of the tongue and reach pole, the addition of steering rods connecting with the movable axle of the

front wheels, and the fastening of huge sprocket wheels to the spokes of the large rear wheels. The brakes, too, have been placed at the back of the rear wheels in-

This is built up in sections, internally, a central water column with radiating tubes closed at the ends being formed of superposed and interlocking rings each having

the boiler and engine. From either side of the boiler at the top protrudes a steam pipe upon the outer end of which is hung near its balancing point, a

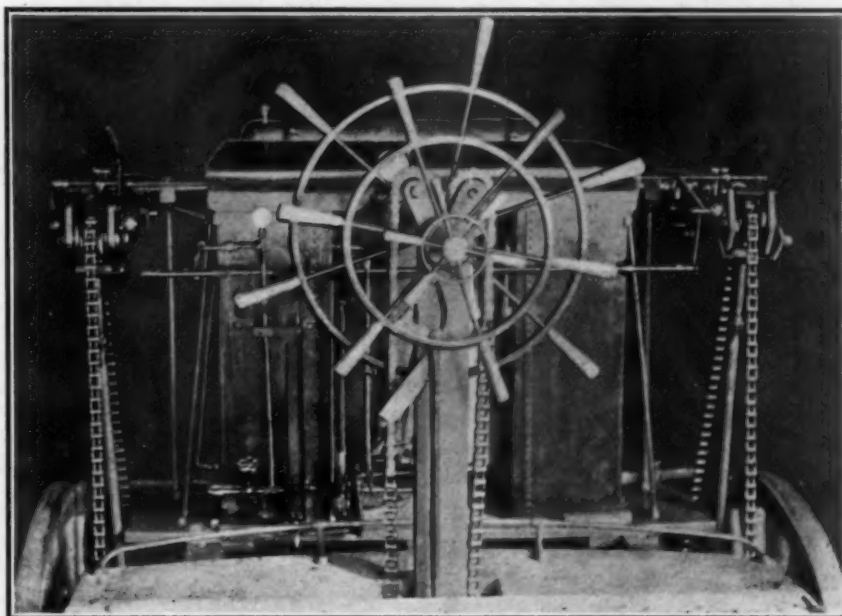


FIG. 4—Power Plant of Blevney Truck, showing circular boiler surrounded by water tank, horizontal engines at either side and wheels for steering, braking and throttling.

stead of in front. Thus the large rear wheels are used as drivers and the front wheels for steering, and the direction of movement of the truck is reversed.

a series of radial water tubes closed at their outer ends. Bolt rods hold these rings securely together, but make it easy to remove any one of them that may be

two-cylinder Stephenson link-motion engine of 2 1-2 horse-power per cylinder, giving 10 horse power for the two engines. These engines are connected trunnion

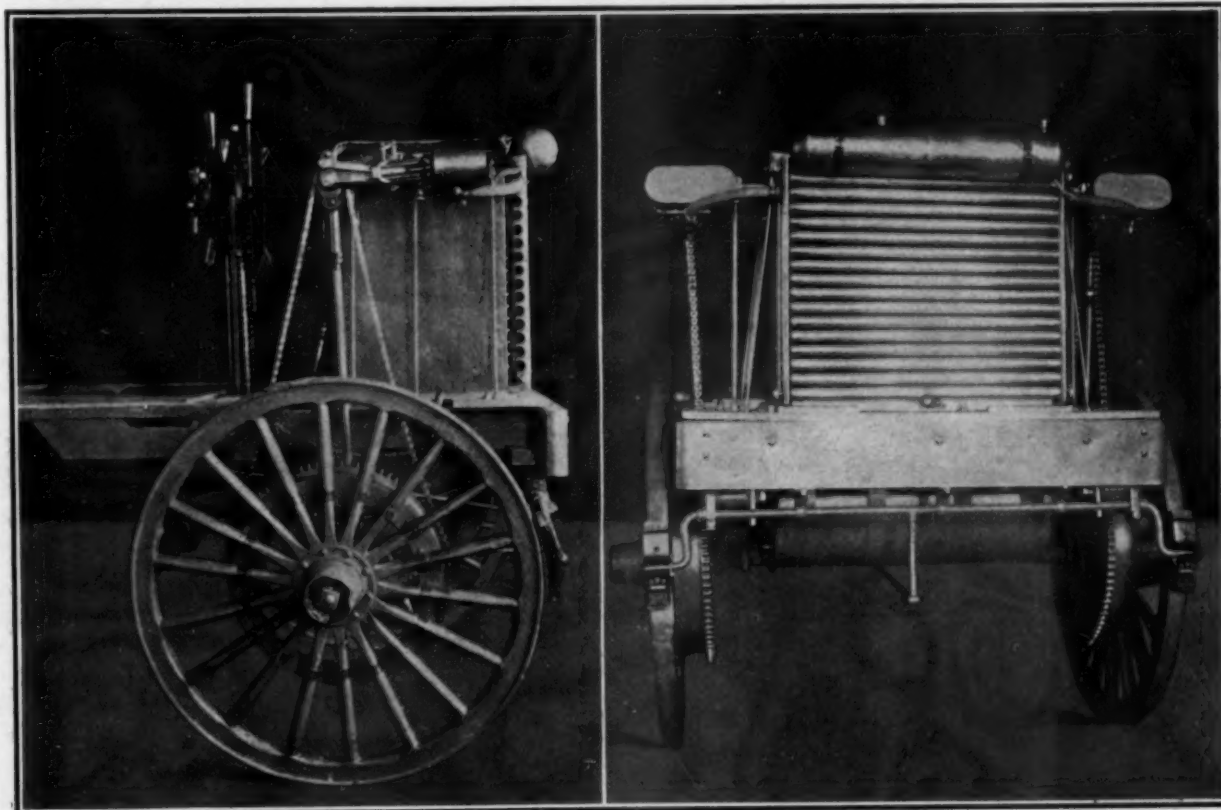


FIG. 2 and 3—Side and Front of Blevney Steam Truck, showing horizontal engines, chain drive, steam condenser, two gasoline tanks, and governing hand wheels.

At the extreme front (speaking now of the vehicle as a motor truck) is mounted an upright cylindrical water tube boiler.

defective and to substitute another. A fifty-gallon water tank, rectangular on the outside, forming a frame to support

fashion to their steam pipes, and while the steam pipes are supported rigidly near their ends by brace rods from the boiler plat-

form, the crank-shaft ends of the engines are directly supported by adjustable distance rods from the axle of the drive wheels (Figs. 2, 3 and 4). Thus the distance of the engine sprocket from the big wheel sprocket can be kept constant, while the engines can move more than sufficiently to compensate for all vertical motion of the power plant due to the spring suspension of the platform. The teeth of the large sprocket wheels are so cut with relation to the chain blocks, it is explained, that the pull is on the lower part instead of at the rear side, thereby effecting the greatest pull or leverage for driving the wagon forward.

Exhaust from the cylinders passes through a flexible rubber tube from the lower side of the cylinders into the top of a condenser placed vertically in front of the water tank. This condenser consists of a series of thin brass tubes 3 inches in diameter, brazed or soldered at their ends to the inner sides of elliptical headers at the sides of the condenser. Brazed to the outer walls of these same headers are the ends of smaller tubes that pass through the larger ones, leaving an annular space only an eighth of an inch in which the steam circulates. As the inner tubes are open at their ends, there is a free movement of air through the tubes as well as around them outside. (Figs. 2 and 3.) The top tube of the series is not so cored, but on the upper side, near the middle, are a number of small perforations connected with a pipe from the water tank. The exhaust steam enters directly into the top tube of the condenser and cold water is automatically pumped through the perforations to spray the steam and condense it more quickly. Thence, passing down the end headers, the vapor is further liquified in the cored tubes and is pumped automatically from the bottom of the condenser into the boiler.

The water pumps which effect this circulation, of which there are two, are located near the base of the boiler at the left and are operated by vertical rods movably attached to a crosspiece or arm on the long transverse rod, seen across the back of boiler and water tank in Fig. 4. This transverse rod has an arm on its right end that is connected with the reciprocating parts of the engine on that side, so that the rod oscillates to actuate the pumps. There is a by-pass cut-off from the boiler feed pump to return excess water to the tank, and the pumps have variable stroke through the movable connection of their piston rods with the cross arm on the oscillating rod.

Another pump is provided for lifting the fuel gasoline from the forty-gallon cylindrical tank hung under the platform beneath the boiler, to the supplementary eight-gallon copper tank strapped transversely at the top of the condenser. (Fig. 4.) The fuel is fed from this tank to the vaporizer of the burner. Provision is

also made for actuating the pumps by hand.

The burner and vaporizer are above the level of the platform, as is all of the machinery except a portion of the steering mechanism, the brakes and the large sprockets. As the operator sits in his seat just to the left of and slightly behind the spoked hand-wheels (Figs. 1, 2 and 4) he can see all of the working parts of the machinery, including both engines, the pumps, the boiler and burner, drive chains, steering gear, steam gauge, air pressure gauge and water column. He is protected against back flash from the burner by a brass wire screen that can be seen in Fig. 1.

Steering, braking and throttling are all accomplished respectively by turning the large, intermediate and small spoke wheels supported on the upright column back of the power plant. (Figs. 2 and 4.) Long steering rods are pivoted near the ends of the movable rear axle and are connected at their forward ends with the ends of a heavy chain that rises through the platform on either side of the steering column and passes over two idle sprockets journaled at the tops of the two branches of a Y at the head of the column, and under a third sprocket at the angle of the fork, which is carried on the shaft of the hand wheel. This shaft is hollow and the shaft of the throttle control wheel passes through it to a valve in the steam pipe. The brake operating hand-wheel is interposed between the larger and smaller spoke wheels, and the brake lever passes under the middle of the large gasoline tank to the brake rod arm at the front of the truck, as seen in Fig. 3.

The photographs show the truck without a top, as they could not be taken with cover on so as to show the machinery clearly. However, the regular canopy top built to go with the wagon is designed to fit over the platform portion of the remodeled truck so as to come far enough forward to bring the driver's seat just in the proper place, with sufficient hood projecting above to protect him from sun and rain. The machinery in no way interferes with this top, which is readily removable.

The truck as completed is mainly a demonstration to show the possibility of using in automobiles a construction having flexibility equal to the best horse-drawn vehicles, and the ratio of pull to weight of machinery under such conditions. There has been no attempt made to provide the wheels with rubber tires nor to substitute a fixed axle and steering knuckles for the movable axle and fifth wheel. The machinery is geared to give a speed of ten miles with 150 pounds of boiler pressure.

Draught from the boiler carries the gases of combustion out at the sides from the top of the boiler above the engines, through the opening seen in Fig. 2.

Practical experiments with this truck are now being made on the streets of Newark, N. J., and upon their results

modifications of the present design may be based. In trials, Mr. Blevney informs us, 720 pounds of machinery have moved a total weight of 10,000 pounds (truck and load) at the rate of 8 miles an hour on a grade 1 in 5.

Details of the Peerless 16-H.P. Gasoline Engine.

We show herewith assembly drawings, partly in section, of the two-cylinder 16 horse-power engine of the Peerless motor car which was described in detail in *THE AUTOMOBILE* last year. The cylinders are of 4½-inch bore by 5½-inch stroke, and the engine is stated to give the car a speed of 30 miles per hour at 900 R. P. M. The connecting rods, which appear to be drop forgings, are of steel, and the pistons are made light and long and have ribbed heads. Both pistons work on one elongated crank pin, thus producing explosion impulses at regular intervals, and the cranks are carefully counterbalanced. The shaft bearings are lubricated by oil rings, and oil is fed to the crank pin bearings by centrifugal force. For this purpose a mechanical lubricator *A* feeds the oil through pipes to the oil holes *B B*, where it is caught on the inside of the sheet metal ring *C* and carried to the drilled hole *D*, indicated in dotted lines. The pistons are oiled by the splash from the crank case.

The crank case is split in the horizontal plane of the shaft, but unlike the more usual practice, it is supported by the bottom half instead of the top. A limited access to the crank pin bearings is provided through the two hand holes at the bottom, fitted with removable caps. The exhaust mechanism is inclosed, but may be reached by removing the cover *E*, shown partly broken away. The centrifugal governor attached to the gear *F*, on the 2 to 1 shaft, operates through the long lever *G* on a throttle valve in the case *H*, through which the mixture passes from the vaporizer *I* on its way to the inlet valves. An air dashpot *J*, with a pet cock to relieve it, is connected to the lever to deaden the rapidity of the governor's fluctuations.

The steel pinion *K*, on the crank shaft, meshes not only with the gear on the 2 to 1 shaft, but with a pinion on the shaft of a centrifugal pump *L*, just below it.

As the drawing shows, the cylinder head is cast integral with the cylinder, with an ample water space. The screwed plugs *M* and *N* are apparently for the purpose of admitting a boring bar, to obviate the necessity of machining these cylinders in a vertical boring mill.

To remove the inlet valves it is only necessary to slacken the set screws *O O* from the cross arms *P P*, which have one end slotted so that it may be immediately withdrawn from the screws which hold them.

Industry Drifts Slowly to Large Engineering Firms in France.

Builders of High-Powered Automobiles Forced to Have Pressed Steel Frames and Engine Parts Made Outside Their Own Factories Train Up Competitors for Themselves.

Staff Correspondence.

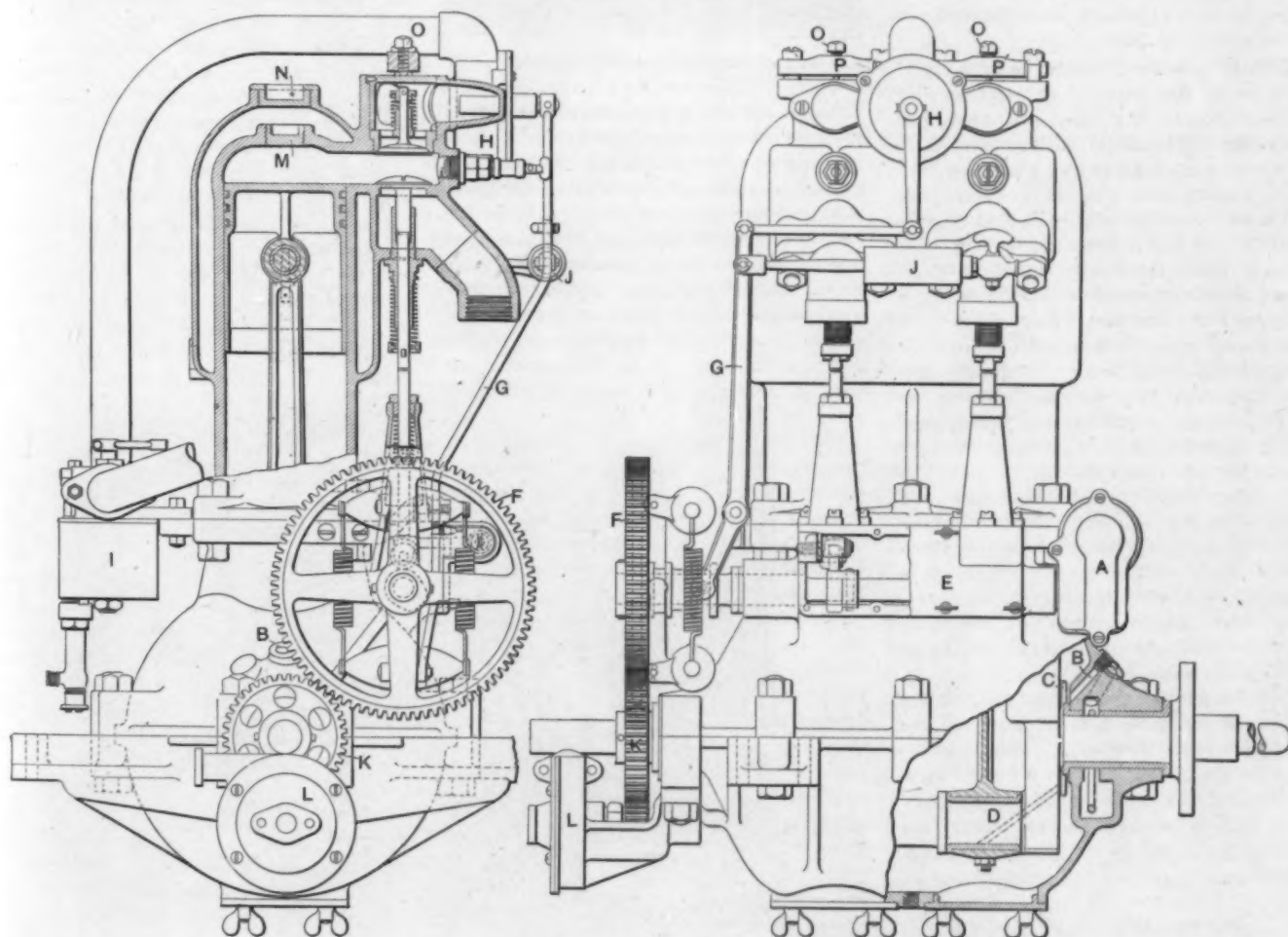
PARIS, March 10.—The conditions of the automobile industry are continually undergoing changes, for each departure from existing practice means an alteration in manufacturing methods until it becomes a question whether, after all, it is to the interest of makers to spend a lot of money on certain installations and equipments of machinery which, in the course of a few months, may become obsolete. A case in point is the introduction of the pressed steel frame that is almost entirely ousting the armored wood con-

certain amount of capital had to be wiped off for depreciation.

It is partly on account of the value of the machinery they employ that some of the makers have refused to follow the lead in pressed steel frames. Panhards were originally makers of wood working machinery, and they were accordingly specially fitted out to produce the best wood frames and wheels. Charron, Girardot et Voigt introduced the system of fitting wood members into square-section steel tubes by hydraulic pressure. Both

To firms like Panhard and Levassor, who make huge profits out of the industry, the expenditure of money upon changes to their plant may be a small matter, but it is quite another thing for small manufacturers who start with only a limited capital and have to make the most of what they have got. It is these changes in constructive methods which constitute one of the most serious risks in the automobile industry, and the partial renewal of a plant every year, or even every few months, must always be a heavy set-off against profits until such time as the motor vehicle has, in its general lines, reached something like finality.

A still more curious feature about the situation is that with the introduction of pressed steel frames and heavy machine parts the industry is becoming specialized. No manufacturer nowadays makes the whole of the vehicle himself. He used to build his armored wood frames, but when pressed steel frames came into use he found that these were a little be-



SECTIONAL DRAWINGS OF THE PEERLESS 16 H.-P. GASOLINE ENGINE.—See opposite page.

struction. Nearly all the firms had so strong a belief in the permanency of the wood frame that they did not hesitate to lay down machinery for its construction, but all of a sudden the occupation of this plant was gone; it became obsolete and a

had certain advantages over their competitors which they were loath to lose, and until the superiority of the pressed steel frame is placed beyond all doubt they will cling to their armored wood frames.

yond his scope. When he had to buy the steel plate ready rolled and cut in sizes it was scarcely worth his while to lay down special hydraulic machinery. The plant would be much too expensive for the few hundred frames he would require

during the year. Consequently, it is the steel works, where the plates are rolled, which have designed and laid down hydraulic machinery for the work, and as these works supply the trade they can afford the expense of putting down a plant for turning out frames under the best possible conditions.

This specialization is being carried still further. With the huge powers being put into the vehicles, automobile firms find it convenient to resort to engine builders who have been making a specialty of engine parts. In the forthcoming races several manufacturers will be entering cars with motors of 100 horse power. Crankshafts for such engines have to be made of the very best and most appropriate material, and turned with the greatest care, but automobile firms find that their resources are not equal to the work. The cost is enormous. They accordingly have to go to the engineering establishments which are specially equipped for heavy turning and have had a long experience in this class of work. Consequently, the specialization necessitated by the new and powerful cars is turning to the benefit of the engineering firms.

One development means another, and so it is in the case of the engineering establishments. As they are providing the automobile makers with engine parts it naturally occurs to them that they may build automobiles themselves and take all the profit on the vehicle instead of only a part of it. The automobile makers have to rely upon the big mechanical engineers; therefore, as these latter rely upon no one but themselves they think that they are in a specially good position for competing for the trade. I do not say that they will step to the front all at once. It does not necessarily follow that a big concern which can turn out the best crankshafts will be able to build the best automobiles, because this can only be done by years of experience. But the time will certainly come when the automobile trade will be largely centered in the hands of the big engineering concerns. They have the resources and the constructive skill, and the experience will be acquired in time.

An instance of this engineering interest in the automobile is afforded by the great Hotchkiss company, which is building a number of racing cars for the Paris-Madrid race. These vehicles will have motors of nearly 100 horse power. If they show up well in the race it will give quite a new trend to the industry.

A. Clement, the French automobile financier, is to open an American branch at 12 East Twenty-seventh Street, New York, April 1. M. Clement is a part owner in the Mors, Panhard and Renault concerns and owns an automobile factory of his own at Levallois, near Paris. Norris Mason, of New York, will manage the branch here.

The Latest Fuel Consumption Trials.

From this distance the details of the numerous contests held in France to demonstrate special qualities in automobiles and to keep the manufacturers and the public awake to the need of constant progress, possess only secondary interest, but the results frequently point a moral, while the pictures from them adorn a tale. Since *L'Auto-Vélo* was compelled by its older Parisian contemporary *Le Vélo* to drop the *Vélo* from its name, it has made itself doubly prominent, and among other things or-



GILLET-FOREST 40-H.P. OMNIBUS.

ganized a consumption contest in which some 40 vehicles managed to show by comparison with similar contests in 1902, that the art of reducing the expense for gasoline per ton-mile had made notable advancement within the past half year, and that the diminution of odor resulting from better carburation and more complete combustion, as well as easier management of machines through improved regulation and greater range of throttle control, go hand in hand with the progress in economy.

The previous record for smallest fuel consumption belonged to the firm Chenard-Walcker, who won first prize in four consecutive contests in 1902, closely followed by Bardon, both of these being firms who had paid no attention to racing. They demonstrated superior economy with alcohol (50 per cent.) as well as with gasoline, and Chenard-Walcker always contended that their good showing was due more to their power transmission and driving mechanism and careful workmanship than to the special features in their engines. The lowest figure of 1902 was 0.06 litre per *tonne-kilométrique*, corresponding to about 0.022 gallons per ton-mile.

In the contest organized by *L'Auto* and finished February 19, five vehicles were below these figures, namely, a Peugeot truck of 12 horse power, weighing 4,680 kilograms, with a consumption of 0.049 litres, a Bardon delivery wagon of 4 horse power, weighing 2,335 kilograms, with 0.050 litres, a Peugeot tonneau car of 6 horse power, weighing 969 kilograms, with 0.053 litres, a Chenard & Walcker car of 10 horse power, weighing 1,160 kilograms,

with 0.054 litres, a Bardon car of 8 horse power, weighing 1,200 kilograms, with 0.06 litres (beating the previous record merely by a decimal fraction not here indicated); all per *tonne-kilométrique*. In addition two other Peugeot cars and one other Bardon car came near these figures. One of the Peugeot cars was driven with 50 per cent. alcohol and the showing it made—0.0635 litres—was considered remarkably favorable for the employment of this fuel.

Among the light motorettes three De Dion-Bouton machines showed the best economy with 0.073, 0.076 and 0.095 litres to their credit. In some of the other vehicles the consumption rose as high as 0.13, 0.14, 0.16 and even 0.20 litres.

The reason generally accepted for the two heaviest vehicles coming out at the top of the list was that their speed was much less than that of the pleasure cars.

As fuel economy contests may be taken up in this country during the coming season, it is worth noting that French opinion on their value and conclusiveness is not undivided. It is admitted that they are instructive when certain machines are repeatedly proved much more economical than others in the same class, but it is claimed, on the other hand, that small differences may be misleading, because the speed of the vehicles and the skill of the drivers greatly influence the results; and the speed rate has so far been neglected in these contests and vehicles going at 8 kilometers per hour have been compared with others going at 30 kilometers, the weight transported over a



PEUGEOT CAR AT TRIALS.

given distance being practically the only factors considered in figuring the fuel consumption.

Industrial vehicles weighing five tons, with their loads, present about the same surface to the atmosphere, says with much reason one of the French manufacturers, as a pleasure car weighing one ton. At equal speeds one has to overcome as much air resistance as the other, which means five times as great resistance *per ton* for the lighter vehicle, and the latter consequently receives a poorer

ing. But, in addition, the lighter vehicle has, under the rules so far employed, run much faster, say three times as fast, because it is geared and intended for higher speed, and the air resistance which it has overcome in the contests has therefore been not only five times higher per ton but also from five to ten times higher by reason of its speed. If the light vehicle were loaded down to equalize weights, as has been proposed, it would not be under the same condition as when used by the public or operated in a manner adapted for its construction, and the contest for that reason would lose its significance. The only practicable arrangement, says this manufacturer, is to divide the vehicles in speed classes, compelling all of the same class to travel at about the same speed, and to give awards to each class but none for absolute economy per ton mile, as absolute fuel economy does not exist independent of other factors.

Much discussion in regard to the driver's part in consumption contests was rife in France in 1902, and during the Alcohol Congress it was even openly claimed that a cunning operator could reduce the fuel consumption in a hilly country much below what it would be on the level by coasting down hill and utilizing the vehicle's momentum on the level or for ascending as high as possible on the up-grade. This contention seemed absurd if it was supposed that all vehicles at all times received the benefit of all the energy developed in the motors. The machines certainly could not store up as much momentum down hill as they would lose up hill, or else perpetual motion had

a waste of fuel compared with the full benefit obtained when running up hill on an intermediate gear with full fuel charges and advanced ignition or on the high gear with open throttle and slow motor speed giving complete combustion. At

the fact that the same machines have won time and again in the various tests seems to prove conclusively that, in the large features, the question of drivers' skill is, after all, either subordinate or—more likely—that it eliminates itself by the uni-



BARDON HEAVY-WEIGHT CAR IN CONSUMPTION TRIALS.

least for light vehicles it might be doubtful if they would consume more fuel going over a given distance coasting one-half of it at very high speed with the motor idle while going the other half at slow vehicle and slow motor speed, with small air resistance, or, on the other hand, going at moderate speed on the level with the motor working all the time. So doubtful was this considered in France in 1902 that practically no agreement of opinion was reached, and when the last

form selection of men of about equal capacity.

MOTORING CONDITIONS ARE IMPROVING IN ENGLAND.

Staff Correspondence.

LONDON, March 10.—"Though street traffic has grown enormously in the last 100 years, there has been no corresponding increase in the facilities for its conduct." On this theme Mr. Worby Beaumont, whose careful works on automobile engineering are well known on both sides of the Atlantic, discoursed entertainingly on a recent occasion. It seemed like the Writing on the Wall that this conservative authority did not hesitate to express his profound conviction that it would be absolutely necessary to exclude all horse-drawn traffic from our streets in order to prevent their absolute congestion and for sanitary reasons, adding that this change would have come much earlier than commonly expected. He also held that tramways and cars running on fixed lines generally should be altogether removed from cities, at least from the surface of streets.

Concurrently, Henry Norman's enthusiastic article in his new magazine, *The World's Work*, about the future of motor cars, the rapid transit through Parliament of the "Enabling Act," permitting the Gordon Bennett race to be run in Ireland and the gradually increasing indifference to reasonably high speed of automobiles, are so many indications that prejudices are giving way and that a public opinion is beginning to flow more in favor of motorists than at any previous time.

The legislative question has just now



FRENCH CONSUMPTION TRIALS.—"LOOKING FOR THE CONSUMPTION."

been invented. But in practice a machine running at a limited speed on the level may be operated under unfavorable conditions for fuel economy. The use of the throttle and the retarding of the spark may mean

consumption test gave its excellent and encouraging figures, many well-informed persons contended that these figures meant greater skill among the drivers rather than improved construction. But

taken another turn and I think I may say a turn for the better on this side. The Legislative Committee of the R. A. C. (Royal Automobile Club) had until very lately favored the introduction of a bill into Parliament by which, amongst other things, the exhibition of a registered number with figures three inches in height was made compulsory, and in exchange therefor it was understood that the Government would sanction the elimination of the speed limit. But now it is felt that it will not be necessary to concede the numbering to obtain the desired result. Within a year or two at the most it is believed that the speed limit will be inoperative. As Earl Russell put it at the post graduate discussion on this legislation at the club: "Is it possible to suppose that a law can last which is habitually and daily broken and set at naught by His Majesty the King, the Prime Minister and other members of the Cabinet, members of Parliament and Justices of the Peace themselves within five minutes of their entering into possession of an automobile?"

READY FOR BENNETT CUP RACE.

I learn on very good authority that it was intended to get one of the first of the Napier Gordon Bennett cars on to the road to-day, but this will hardly be, as the weather a low and aloof is about as untoward as it well can be. The racer to be put into competition with the Napier fliers, the Star 80 horse power, in course of construction by the Star Motor Company, of Wolverhampton, is also just now ready for her initial road trials, so that our champions may be said to be fairly forward.

Inhaled Motor Exhaust Fumes.

A motorist who carried out a long series of tests with a gasoline engine in a closed motor house relates that after about an hour he felt light in the head. He took out his bicycle and went for a spin in the open air to clear off the effects of the fumes. He returned in a few minutes to his house, got dizzy almost immediately, and fainted away. It took ten minutes to bring him 'round, and two days elapsed before he felt perfectly well again.

He had held the belief that the exhaust gases would overcome one as the ordinary illuminating gas does, and fancied that if the victim got to the open air in time he would quickly recover. But to his cost he found the exhaust gases of a more insidious nature, for they subjected him to a slower, more gradual, but more troublesome form of poisoning.

The principal constituent of the exhaust gases from a gasoline motor is carbonic acid gas, which is the main product in any atmosphere vitiated by any form of combustion. A crowded theater or building with insufficient ventilation has the oxygen converted into carbonic acid gas by

the breathing of the occupants, and gas-light or other open flame illuminants also deprive the air of its free oxygen. From the gasoline motor, however, there also comes the deadly carbon monoxide, that constituent of water gas which makes it so terribly poisonous.

This carbon monoxide, mixed with the carbonic acid gas, makes up a very noxious compound when breathed for any time, and as a gasoline engine rapidly loads the atmosphere with these products and such other things as nitrogen, it can be readily understood that it is not good for health to work a gasoline engine in a small building with closed doors for any length of time. There is, of course, not the slightest danger if one take the ordinary precaution of having proper ventilation, and few people beyond enthusiasts are likely to sit in close proximity to the exhaust pipe for an hour or so.—*The Car*, London, Eng.

FRENCH TRY TO OUST GASOLINE BY GOVERNMENT ACTION.

The French Chamber of Deputies has voted, 319 yeas against 188 nays, for a resolution in favor of establishing a government monopoly in the distillation of petrol (gasoline) at the earliest possible moment, and also voted for a cabinet proposition to impose a tax of 1.25 franc per 100 kilos, or 1 franc per hectoliter on unrefined mineral oils (as defined by the law of June 30, 1893). The embargo is to apply to domestic as well as to imported raw oils, a tariff provision having been passed to apply to the latter.

While the ostensible object of the taxation is to provide a needed revenue of 30 million francs, it is assumed in France that the government really has another object in view, namely, to force the adoption of alcohol mixed with mineral oil, as fuel for motor cars instead of gasoline, so as to keep the profits of the automobile movement in France and make the French alcohol producers share in its benefits.

Carl Benz, the contemporary of Daimler, as inventor of mechanical vehicles, has retired from active management of his works at Mannheim, giving place to his son, Eugen Benz.

A proposal is under discussion for a special track for motor cars in the vicinity of London. One location recently inspected is about 16 miles from the city and will give a 6 1-2-mile circuit, including a mile straight and some hills.

The Oldsmobile Co., of Great Britain, Ltd., has made a change of name and in the future will be known as the Anglo-American Motor Car Co., Ltd. It has the sole agency for the Oldsmobile, Winton, Baker and the Vehicle Equipment Co.'s cars, also the Royal motor cycles.

Correspondence

Interested in Carbureters.

Editor THE AUTOMOBILE:

Sir:—Amongst others of your subscribers, I have been interested in your recent descriptions of carbureters or mixers on gasoline machines.

From a mechanical view it does not appear that any "float feed" carbureter can comply with the requirements on account of the jar interfering with the feed and flooding.

One carbureter used sets the main gasoline tank low, whereby an automatic pump keeps a small tank above the carbureter overflowing, the overflow falling into main tank, of which it is practically a part. From the elevated small tank the gasoline is conveyed by tube to the carbureter, where it runs through a perforated tube or funnel shaped screen beneath which is a tube conveying the surplus back to the large tank. This keeps a constant supply of gasoline in contact with the air drawn in, and no matter whether the engine runs fast or slow, the air gets the same saturation.

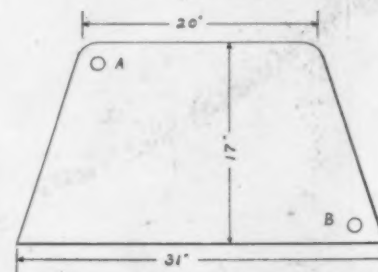
This carbureter had the appearance of being on the same track, at least, yet it is now displaced by a new mixer, the features of which I am not familiar with, but is said to be more efficient and works on the same general plan. I hope the prominence given to different types of carbureters in your valuable journal will lead to the production of a better carbureter than any yet in use. JOHN GARDINER.

Tucson, Ariz.

Radiator Area.

Editor THE AUTOMOBILE:

Sir:—I now drive a 9 horse power Napier car, the same make that won the Gordon Bennett cup last year. I imported this car in April, 1901, and have been run-



SKETCH OF PROPOSED RADIATOR.

ning it ever since with entire satisfaction, and might say that I have never been stranded; that is to say, I have always come home under the car's own power.

Last February, March and April, my wife and myself took a three thousand mile tour through England and France without even having one puncture. The only stop we had to make was one day

when we were about fifty miles from Paris: we ran out of gasoline, and it took us about two hours to get a fresh supply.

I should like your valued advice on one question. I am changing my cooling system to the Mercedes system. Before I had a 10-gallon tank and about 39 feet of cooling coils. Now I propose putting in a tank about 3 1-2 inches thick and with 260 3-4-inch holes through it. The dimensions of tank are as per sketch. I intend also to have a 13 1-2 inch fan running about 400 revolutions driven off main engine shaft. A is the pipe connection for the water to flow into the tank from the engine jacket, and B is the connection for the water to flow from the tank to the circulating pump. I might say that my engine is a two cylinder 6-inch stroke and 4-inch diameter, running at about 700 revolutions per minute. Do you think with this system I would have enough cooling surface? If not, could you propose anything that would improve it?

J. K. L. R.

Montreal, Canada.

[A calculation shows that 260 tubes of an inside diameter of 3-4 inch and 3 1-2 inches long will have an inside surface of less than 15 square feet. To properly cool your engine you should have about 30 square feet, which you could get from 800 tubes 1-2 inch inside diameter, which number you could easily get into the space available for your tank. The fan should run at least 1,000 revs. per minute.—Ed.]

A Question of Grade.

Editor THE AUTOMOBILE:

Sir:—Will you kindly settle a controversy between a friend and myself regarding the question of percentage as applied to ordinary road grades. We seem to have widely different ideas of the question, and my idea is that the horizontal line represents zero per cent. grade and that the perpendicular line represents 100 per cent. grade, and that the divisions of this 90 degree angle correspond directly to percentages of grade; that is to say, an angle of 45 degrees is 50 per cent. grade, and an angle of 22 1-2 degrees is 25 per cent. grade, and so on, each number of degrees from 1 to 90 corresponding to the percentages from 0 to 100. My friend, however, contends that the percentages of grade refer directly to the number of feet of elevation in a distance of 100 feet, and argues that advancing on a base line of 100 feet, and receiving an elevation on that base line of 25 feet, would give a grade of 25 per cent., as the elevation is 25 feet on 100, and that an elevation of 50 feet on this same base line giving 50 feet raise in 100 represents a 50 per cent. grade, and that an elevation of 100 feet on the base line of 100 feet, being one foot of elevation for every foot measured on the base,

represents 100 per cent. grade. This latter line corresponds exactly to an angle of 45 degrees, which, from my standpoint is a 50 per cent. grade, and from the

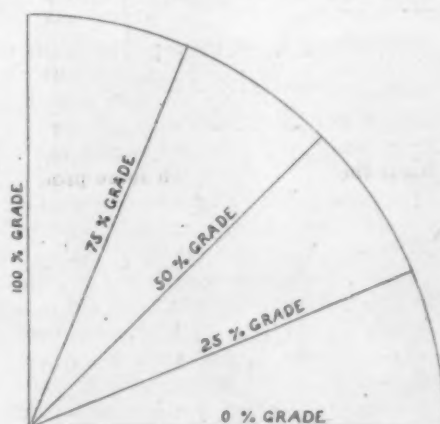


FIG. 1—“MY IDEA.”

standpoint of my friend is 100 per cent. grade.

Will you kindly say which is right in this matter and give diagram explaining:

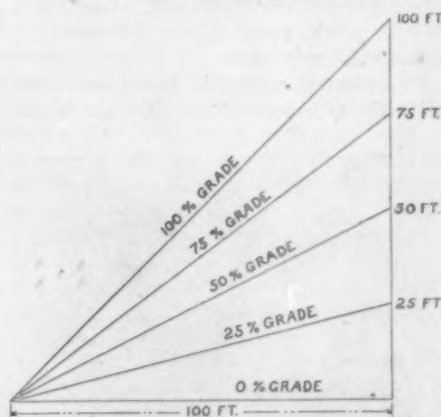


FIG. 2—“MY FRIEND'S IDEA.”

it, as I will confess that his argument that 25 feet elevation in advancing on a base line of 100 feet would seem to correspond to the idea of 25 per cent. I send you

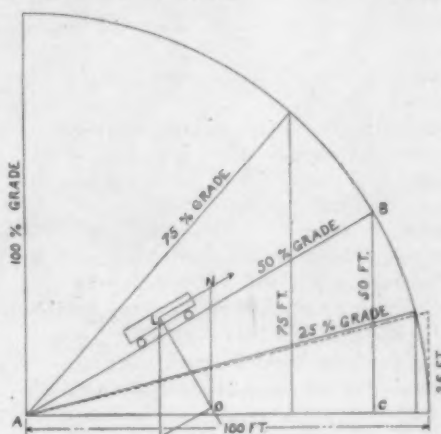


FIG. 3—THE SCIENTIFIC METHOD.

two sketches, Fig. 1 showing graphically my idea, and Fig. 2 that of my friend.

Philadelphia.

L. G. H.

[In ordinary highway and city surveying the percentage of grade is taken as the ratio of vertical rise to horizontal distance covered. Your friend's idea is therefore correct from this viewpoint. It will be noticed that on this system the percentage of gradient is directly measured by the tangent of the angle of slope, and does not correspond at all to a uniform angular increase of the slope; the angular increase between zero grade and 25 per cent. grade being considerably greater than that between 75 per cent. and 100 per cent. It will be noticed also that the limit of possible increase in the grade (i. e., a vertical line) is not 100 per cent., but infinity, as with a vertical line the horizontal distance traveled becomes zero.

This system, although we believe it is universally employed in highway surveying, as it is, for obvious reasons, in surveying real estate, is discarded by railway surveyors in favor of a really more scientific system by which the percentage of grade is taken as the ratio of vertical rise to distance traveled along the slope, which is measured by the line of the angle of slope. This is the system shown in Fig. 3, and the reason for it is that it makes possible a very simple calculation for the drawbar pull (neglecting friction) necessary to sustain a car on the grade; the ratio of drawbar pull to the weight of the car being in fact simply the ratio of the grade. The reason for this is indicated by the diagram in Fig. 3, representing a car on a 50 per cent. grade. If the vertical line LM represents by its direction and length the direction and weight of the car, we may determine the amount of drawbar pull LN by drawing the line LO perpendicular to the slope, and drawing from M a line MO parallel to the slope. Then MO (or LN , which is equal to MO) will represent by its length the drawbar pull, taken parallel to the slope, to the same scale as LM . As ABC and LMO are similar triangles, the ratio of MO to LM , or the ratio of drawbar pull to weight, is the ratio of BC to AB . This ratio expresses the line of the angle of slope, and for large angles is altogether different from the tangent, as Figs. 2 and 3 show. For small angles, however, including all ordinary grades, the difference between the line and the tangent is inconsiderable. Even for a 25 per cent grade, about as steep as would ordinarily be met with in motoring, the difference between the tangent (shown in Fig. 3 by dotted lines) and the line is less than 1 degree, both lying between 14 and 15 degrees.

Although the tangent system is that used in highway surveying, the line or railroad system has the obvious advantage that grade percentages are exactly equal (friction aside) to the force per unit weight required to overcome them, which makes it easy to compare the hill-climbing capacities of different vehicles.—Ed.]

Electric Pleasure Vehicles for All Purposes and Purses.

Popular Description of the Ideal Pleasure Carriage; Its Construction and Operation—Points About the Storage Battery—Styles of Vehicles on the Market and Range of Prices.

In view of the marvelous development of electrical engineering within the past twenty years, and of the widespread use of electricity as a power for both station-



WAVERLEY ELECTRIC CHELSEA.

ary and movable machines, it is not surprising that it figures prominently in motor car propulsion.

Whatever degree of perfection may be attained with other power agents, there are certain points in which they can never hope to equal electricity. It can be applied through the most simple mechanism, reliable in the extreme, and requires little care in use and no great skill in operation. It produces a direct rotary motion, such as is essential to vehicle propulsion, with no conversion from a reciprocating motion as in other power agents, and is adapted to the many exigencies of road travel where a car may be called on to exert extraordinary power for short intervals. Not the least of its recommendations for pleasure uses are its freedom from noise and odor, and from vibration, imparting an easy motion to the car.

Electricity has a special nomenclature of its own; the terms being comparatively new and specially coined for the purpose. The simpler of these terms must be understood, as when the passage of electricity is barred by various substances, "non-conductors," such as glass, porcelain and mica, and finds its way with greater or less freedom through conductors, notably the metals, with silver and copper heading the list, while but little is known of the manner in which the electric current passes instantly from one end to the other of a solid, such as a length of copper wire, it is generally recognized that this action is in a manner analogous to the passages of water through a pipe, in which the "head" or pressure corresponds to "volts," and the flow through the pipe, at a certain speed, giving a volume of a certain number of

gallons per minute corresponding to the "amperes" or quantity in the terms of electricity.

Some idea of the general values of these units may be had from the facts that a pressure of 110 volts is commonly used for incandescent lamps; 500 volts is the regular pressure for driving a trolley car. The amount of current required by an incandescent lamp is about 1-2 ampere; a street arc lamp requires from 6 to 10 amperes. The unit of electric power is the "watt," the volt or pressure multiplied by the amperes. It is equivalent to 1-746 horse power. The "kilo-watt" is 1,000 watts. The "kilo-watt hour" is a unit of work, equal to one kilo-watt for a period of one hour.

The electric motor is based upon the principle of electro-magnetism and dates



COLUMBIA ELECTRIC HANSOM CAB.

back to the principle of the telegraph that a current of electricity passed around a bar of soft iron renders it a magnet, remaining so as long as the current continues. It is beyond the scope of this paper to describe in detail the construction and arrangement of the magnets and coils in an electric motor. The current passes through a "controller," an arrangement of electric switches by which the current from one or more sources may be directed in various ways to the single motor or two motors, a very large number of combinations being possible. These combinations give instant starting and stopping power, speeds forward and backward, and a powerful electric brake by which the car is controlled.

The communication of motion from the revolving shaft of the motor to the wheels of the car is a very simple matter. A single set of gears may be used, as in the ordinary electric cabs, where a large gear

wheel is secured to the inside of each rear wheel and driven by a small pinion on the shaft of the electric motor, two motors being used. With this arrangement, common to all the larger electric vehicles, no differential gear is required, as the two motors are so connected as to act together as an electric differential according to the different pressure of the two wheels for the moment. In the light runabouts and stanhopes a single motor is commonly used, suspended near the center and driving by means of a sprocket on the motor shaft and the ordinary differential with sprocket and chain.

As every one knows, the original source of power for an electric vehicle is some stationary plant, where the storage battery may be charged. The weight of this battery, its capacity and the rapidity with which it can be charged and discharged constitute the limitations of an electric automobile. A few late forms of passenger and commercial cars furnish a gasoline engine to drive a generator which delivers continuously to a smaller battery from which the motors are supplied. Notwithstanding the fact that the storage battery has received the attention of the experimenter and the expert electrician from its infancy, its weight still constitutes a limiting factor in road capacity. The claims made some years ago for the new Edison battery are not yet demonstrated to the public, but the claim of an improvement is still adhered to by the promoters.

GENERATING AND CHARGING STATIONS.

It is essential to the full realization of the possibilities of electric motoring that a generating and charging station shall be found at distances of not over 40 miles, the average range of the present storage battery in ordinary service. The lack of such a series of stations in the past has seriously hindered the introduction of the electric vehicle for general touring, but their number is increasing so rapidly that



NATIONAL "C" SPRING RUNABOUT.

this obstacle is now disappearing in all well-settled communities. The use of the electric vehicle is not, however, limited exclusively to the vicinity of public charging plants and storage stations, as it is

possible at a moderate expense to install a private plant, a dynamo run by steam or a gas motor, the latter using illuminating gas, gasoline or kerosene as a fuel. A private plant of this kind such as is frequently installed for the lighting of country houses and the charging of the batteries of electric launches, will at the same time serve for the needs of the electric car.

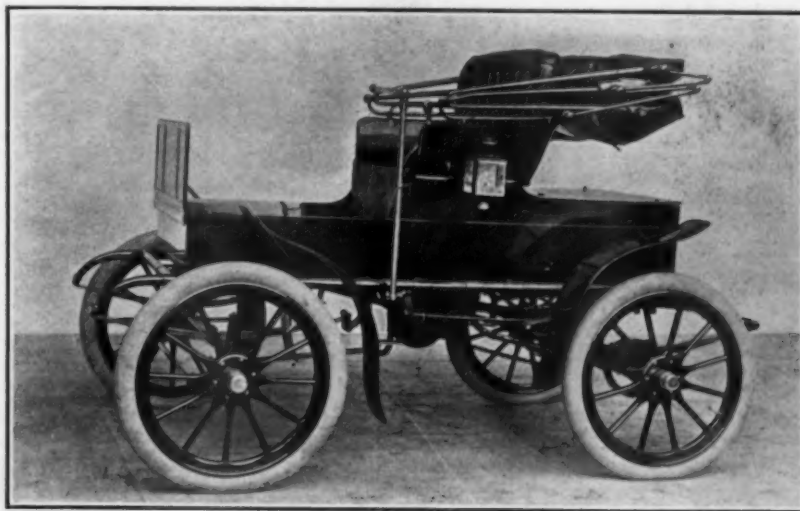
The distance which a car may cover on one charge is uncertain, but the average is approximated at 40 miles. The electric car is at its worst on bad roads and steep grades, as the continued demand for extra power may exhaust the batteries very rapidly, but on reasonably smooth, dry roads the range of 40 miles from station to station, or of 20 miles out and back, is perfectly safe. On really good roads a much greater distance should be covered.

SERVICE IN CITIES.

In the service for which these vehicles are most used, runs of five to twenty miles at a time on city streets, this limitation practically disappears. The pre-eminent advantages of the electric car lie in its cleanliness, readiness, convenience and reliability. For ordinary city use the advantages are entirely on the side of electricity, and though not adapted for touring, with reasonable care on the part of the driver long runs may be made where roads are good and charging stations fairly close together. For women the electric car is most desirable, whether for pleasure driving in the vicinity of a city, for shopping or for personal use. The presence of the battery gives exceptional

hopes of an expectant world, the electric vehicle user will have to continue to get along with the lead storage cell of his fathers, and be satisfied with a commercial radius of from 40 consecutive miles

eral attention, with an intelligent and watchful regard for its peculiarities—every successful electric vehicle owner can testify. A battery may be ruined in a day by wilful neglect to follow instruc-



STUDEBAKER ELECTRIC RUNABOUT WITH BUGGY TOP.

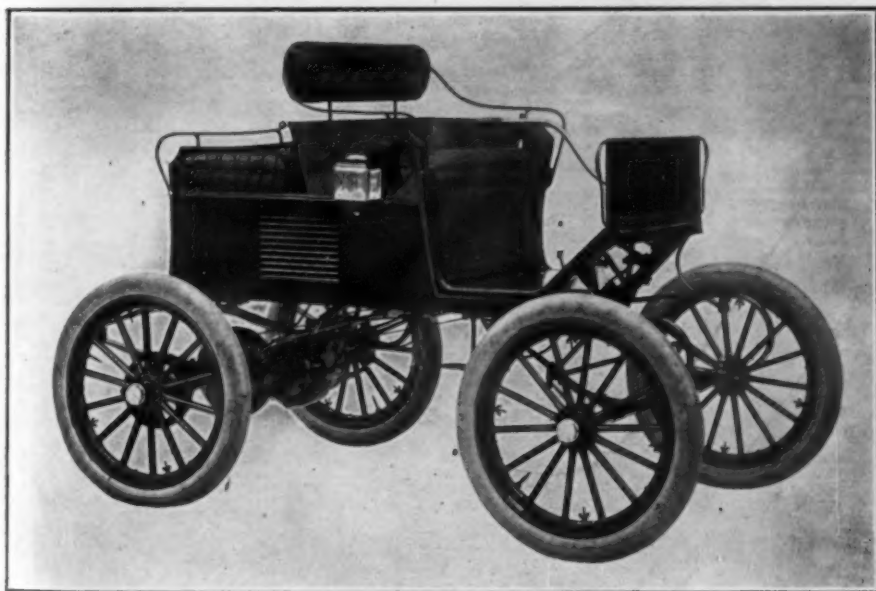
on level asphalt, on one charge, down to perhaps 15 or 20 miles on bad roads or hills, in snow, or with frequent starts and stops. While this restriction on distance certainly limits the utility of the electric vehicle, it does not at all impair its serviceability for short runs, such as city or suburban work mostly consists of; and, with the mileage limit per charge once fully understood, the only remaining concern of the vehicle's owner is with the management of his battery.

tions; but properly handled it may run for many thousands of miles, and approach as nearly to absolute dependability as anything yet found in the automobile field.

The latter happy result calls for a merciful driver as well as a conscientious operator at the charging station; and, since the owner must know something about his vehicle to perform his own part properly, and strict attention to business on the part of the electrician is not always guaranteed by high charges, many owners think it best to have the whole process under their own supervision, and attend either personally or through a trusted servant to all the charging, testing and minor "doctoring" necessary. To one who has some basis of electrical and chemical knowledge to build on, and a little time available for the purpose, this plan will usually prove the most satisfactory.

SOURCE OF CURRENT NEEDED.

The man who expects to charge and care for his electrical vehicle on his own premises will need, first of all, a source of direct current having a potential of not less than 2.7 volts for each cell in his battery. Thus, if he has a light runabout his battery may have but 20 cells, in which case he will need 54 volts. If he has an electric victoria or surrey, it will probably have 40 cells, for which the ordinary potential of incandescent light circuits—110 volts—will be just about right. As a matter of fact, the incandescent light circuit is likely to be his only available source of current; and, if his battery is a small one, he will be compelled to interpose resistance in his charging circuit to avoid putting an excessive current through his bat-



NATIONAL DOS-A-DOS TYPE ELECTRIC VEHICLE.

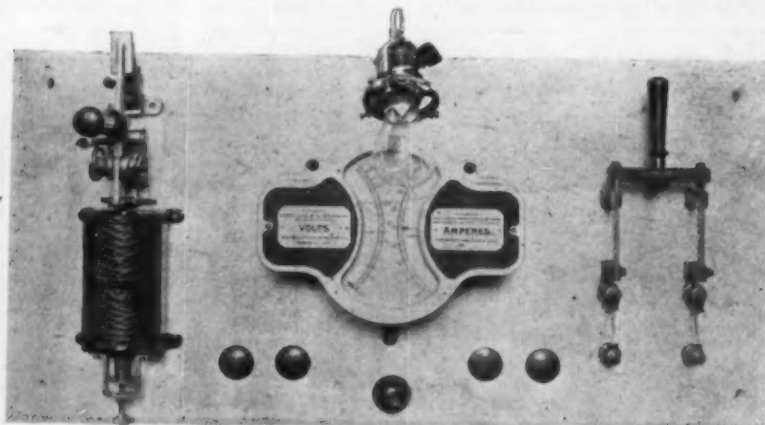
facilities for both lighting and heating a vehicle.

Until the Edison and other promised nickel-iron batteries at length fulfil the

That nearly everything in service and satisfaction rendered depends on this one precise point—whether the battery is treated, in charging, discharging and gen-

tery. This resistance, which may be supplied by a bank of lamps, but for which one should preferably provide himself with a charging rheostat, necessarily

If one lives in the country and has no lighting circuit at his command, he can, if he has a fair knowledge of mechanics, solve the problem very happily by ac-



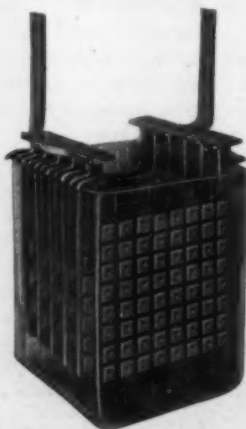
WESTINGHOUSE SWITCH BOARD FOR SINGLE VEHICLE.

wastes energy, but this cannot be avoided. The volume of the current will depend on the size of the individual cells. It is customary to charge most cells at their "4-hour rate," meaning the rate of discharge in amperes which would discharge them completely in four hours, until they are about two-thirds charged, and then to reduce the charging current to one-half or one-quarter of the 4-hour rate until they are fully charged. With the cells most commonly used this 4-hour rate will be about 20 amperes.

To get this current with an ordinary 20-cell battery on a 110-volt circuit, one would need some thirty 50-volt lamps in multiple, giving a resistance of about 3 1-2 ohms. This is evidently an expensive way of getting so small a resistance, and really should not be considered as against a rheostat.

As the energy wasted in the resistance is nearly that required to light the above number of lamps, it will often happen, especially if one has several similar vehicles to be charged, that money can be saved by installing an apparatus for transforming the current at the mains into one of a lower voltage. Such apparatus generally takes the form of a motor and dynamo coupled together, the motor taking current, say, at 110 volts, and running the dynamo, which generates current at 55 volts or whatever is desired. Such an apparatus is shown in the photograph of the interior of a carriage stable. While its first cost is high, it is very economical and requires little attention. The motor in this case may be designed for either direct or alternating current, so that one is not limited to a direct current supply. Where the current is direct to start with, a simple and ingenious modification of the above is to use but one machine, having both motor and generator sets of winding on the one armature, with separate commutators and brushes for the two currents.

quiring one of the direct-connected generating sets, a small gasoline or kerosene engine coupled to a dynamo, which



STORAGE BATTERY CELL.

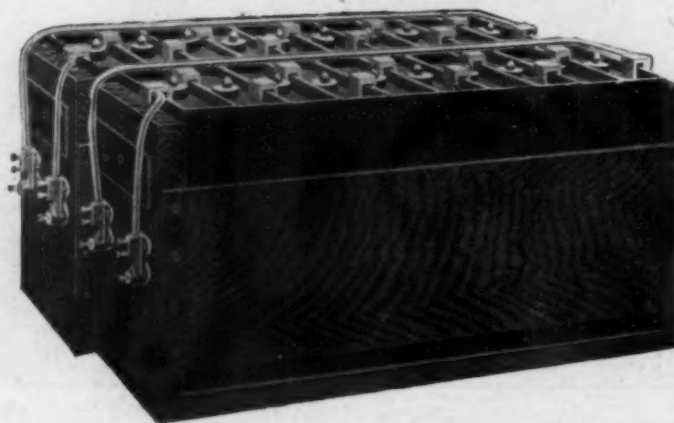
are now built for this very purpose. The same outfit, in fact, may be used to charge his vehicle by day and light his

of regulating it by lamps, rheostat, or (best of all) by regulating the field strength in a motor-generator set, one must next provide a switch board with double pole switch, current measuring instruments, and preferably an automatic circuit-breaker as well, to open the circuit when the batteries are full. Such a switchboard, equipped for charging one vehicle, is shown in the accompanying engraving. As in most vehicles, the voltmeter and ammeter are here conveniently combined in one instrument. Of these, the ammeter will be the one most watched till the batteries are nearly full, which condition will be indicated by the voltmeter.

As to the charging process itself, complete instructions, which vary slightly for different makes of cells, are, of course, furnished by the battery makers. Their essential points, common to all makes, are about as follows: Charge the battery at its 4-hour rate for from two to three hours, watching the ammeter and cutting resistance in or out to keep the current from rising too high; then reduce the current to 1-2 or 1-4 of the 4-hour rate, and continue charging till the voltage of the battery ceases to rise, which will be at 2.6 or 2.7 volts per cell when the charging current is on. Another indication that the battery is full is a liberal evolution of gas from the plates. If a very full charge is desired, the battery may be disconnected for a time, then connected again, when it will be found that it will take a small further charge. The temperature of the battery should never rise above blood-warmth.

DISCHARGING THE BATTERY.

To discharge a battery properly is quite as important as the charging process. It should never be discharged below 1.7 or 1.8 volts per cell, and when discharged should be *immediately* recharged. The discharge rate should not, ordinarily, exceed the 4-hour rate, but heavier discharges may be risked for short periods. In gen-



TWO TRAYS OF SPERRY STORAGE BATTERY.

house by night. The cost of such a set is comparatively small.

Having provided the current, and means

eral, abnormal currents, whether in charge or discharge, will soon spoil a battery. By watching the voltmeter on the

dashboard, one may estimate very closely how much energy he has in reserve.

Besides the routine of charging and use, a small but regular amount of attention must be given to the internal condition of the cells. The density of the acid solution may vary, by evaporation or otherwise; or solution may be lost by slopping. The former is made up by adding distilled water, the latter with fresh solution. On full charge the density should be from 28 to 29 degrees Beaumé, depending on the make of cell. This testing for density is done by hydrometer, the most convenient device being a "hydrometer syringe"—a glass tube with rubber bulb, and a hydrometer contained within it. In addition, each cell should be individually tested for voltage, say once a week.

STYLES AND PRICES OF VEHICLES.

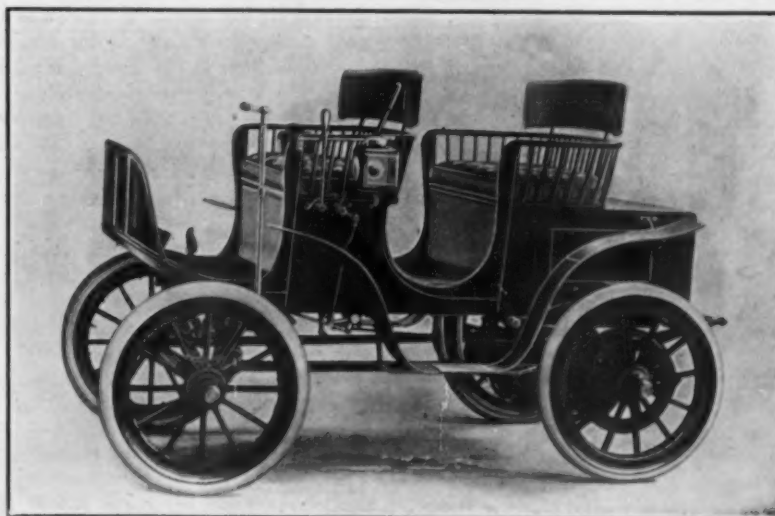
The use of electricity as the motive power for the automobile makes it possible to adhere more closely in general design to the usual types of horse-drawn carriages than is the case when steam or internal combustion engines are employed. Lines of grace and quiet elegance of finish are indeed characteristics of the leading makes of American electric vehicles.

The experience of the carriage builder, gained in long years of effort to produce handsome horse-drawn vehicles, is used to great advantage in the construction of the self-propelled carriage. There is today an infinite variety of styles to select from, most of them showing great taste

In point of numbers there are probably more electric vehicles of the runabout style sold than any other. From this simple type, peculiarly American in style and

exotic as yet, and it is doubtful if it will displace any of the standard types to any great extent.

In price there is, perhaps, more uni-



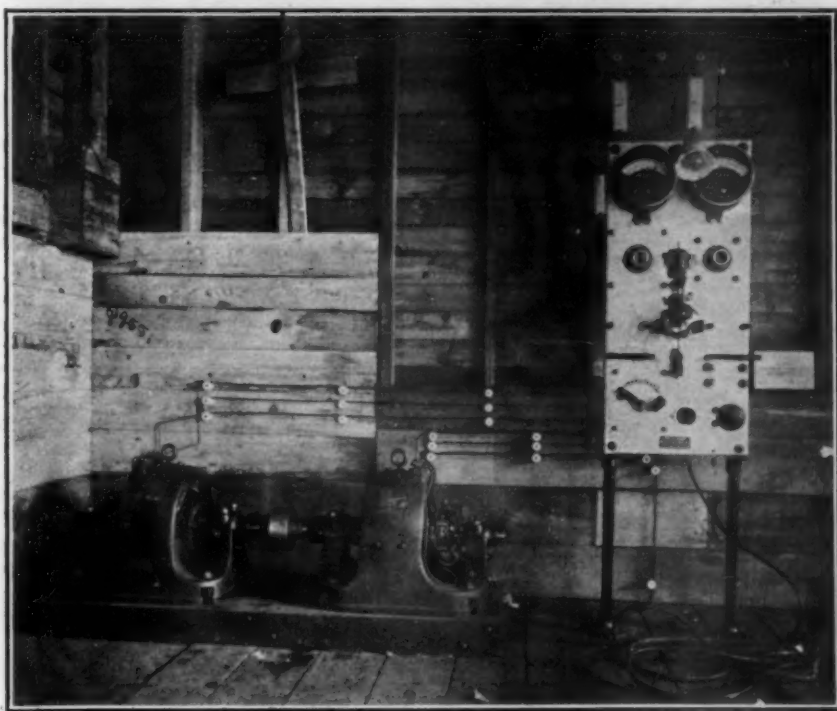
COLUMBIA ELECTRIC SURREY, WITH STICK SEATS AND CURVED DASH.

probably the "smartest" of all modern self-propelled vehicles, the choice lies through a range of carriage types that includes among others the Road Wagon, the Trap, the Stanhope, the Surrey, the Coupé, the Brougham, all for family use, and the Station Wagon and the Opera Bus for seating a number of passengers.

In addition several of the electric vehicle makers have lately added to their styles a tonneau type carriage, so that

formity in the case of electric vehicles than in any of the other forms of propulsion. The Runabouts range from \$850 upwards, and the highest price is reached in carriages for family use, kept regularly in stock, in the modern Brougham, at \$3,500. We here reproduce photographs of a number of the leading makes of vehicles.

The Runabout, ranging in price from \$850 to \$1,200, in its simplest form even, has all the dash and raciness of the highest grade light horse-drawn wagon. It is usually built with piano box body, and ranges in weight from 650 to 1,300 pounds. Tops and storm aprons are usually optional with the purchaser. The motor is usually about 3 horse power, with an "overload" capacity—which is very useful in climbing hills or getting out of a stretch of bad ground—of double that or more. The range of travel on one charge is usually given as 40 miles, with two passengers up. This depends, of course, on care in maintenance and manipulation, but all good vehicles of this class have abundant storage capacity to cover the legitimate uses of a Runabout. The "controller" or device for regulating the speed of the vehicle has usually three or four separate speeds forward, ranging from about 3 to 15 miles an hour, this also, of course, depending somewhat on the road and other conditions, just as in the case of a horse-drawn vehicle. Powerful brakes are supplied and means for quick reversal, and the control of these cars is very certain. A standard Runabout, taken at random from a number of the best makes, gives these dimensions: Track, 54 inches; wheel base, 61 inches; wheel diameter, 30 inches; tires, 30 inches by 3 inches; body length, 73 inches; body width, 29 inches; seat width, 33 inches; floor height, 28 1-2 inches.



WESTINGHOUSE MOTOR-DYNAMO CHARGING SET INSTALLED IN STABLE.

in conception and giving the purchaser an opportunity to buy a vehicle suited for almost any special service.

those who favor this foreign style of carriage can purchase it with the electric drive. The tonneau car is somewhat an

These, of course, will be found to vary in different makes, but the foregoing is a fair sample.

When it is desired to have a vehicle carrying more than two persons, the two-



COLUMBIA ELECTRIC CHELSEA.

seated Surrey and the Trap give a choice, at prices in the neighborhood of \$1,200 to \$1,500. In the former the two seats are permanent portions of the body structure, the passengers—it will carry four persons—all facing forward. The Trap can be had with seats "dos-a-dos" fashion, in which the passengers sit back to back, the endboard of the carriage being hinged so that it can be closed up when only two persons are up, and thus making a vehicle almost as compact in appearance as the Runabout.

THE STANHOPE STYLE.

When a more ornate vehicle is desired for city use for example, the Stanhope can be had, with top and without, for about \$1,500. The greater elaborateness of design is usually matched with a greater richness in finish, colored broadcloth instead of leather being frequently used.

TONNEAU TYPE CARS.

Electric vehicles with tonneau bodies, in which the tonneau is detachable, can be had in various styles of finish. In fact any one who preferred this type of carriage would likely wish to incorporate in it his personal ideas regarding finish and details of equipment. A standard vehicle



WAVERLEY ELECTRIC STANHOPE.

of this type is listed by one of the largest concerns at \$1,800.

All the foregoing styles can be operated by the owner, if he or she so desires, and

usually the purchaser enjoys driving the vehicle quite as much as he appreciates its convenience and cleanliness. For city uses the regular carriage types are especially desirable. No other vehicle is so convenient for shopping, especially in congested districts, as the motor car, and the electric vehicle is the most easily handled, and also the acme of cleanliness. Far more so indeed than the horse-drawn open carriage, for there is no beast in front to scatter hairs over one's dress, or to cough in one's face, or to need holding when a stop is made. These and other reasons have made the electric open vehicles extremely popular with women, who can wear their usual costumes when driving, the unbecoming special automobile suits being quite unnecessary.

HEAVIER PRIVATE VEHICLES.

In the case of the heavier enclosed vehicles the services of a driver are usually necessary, just as they would be with the horse-drawn carriage. These vehicles are suited for use in inclement weather, at night, or for "state occasions." One of



WOODS ELECTRIC VICTORIA.

the simplest forms is the rear-driven Coupé. This carriage will hold two persons, or with interior drop seat four. The driver is perched up at the back, like in a hansom cab, and so a clear view is had by the occupants out of the large glass front. These carriages cost in the neighborhood of \$3,000. A modified form of this vehicle is made without the outside driver's seat, the operating handles being placed inside, so that it can be run without an attendant. It is a favorite type with many physicians.

At the top of the list in stateliness and "respectability" comes the Brougham, designed, usually, on the familiar lines of the horse-drawn carriage, with straight or extension front, and with the driver's seat in front. The market price for the standard type is quoted at \$3,500, and this includes all the modern conveniences that the best horse-drawn vehicles contain. Additions to the price can of course be readily made by artistic modifications in the upholstery and finish, the limit of expense in this direction being only measured by

the owner's personal tastes and the length of his purse.

SPECIAL TYPES OF VEHICLES.

Special types of electric vehicles, such as the Golf Brake, for use in going to and



COLUMBIA REAR-DRIVEN COUPE.

from the links, as its name would imply, and the Station Wagon, a most convenient addition to the country house garage, are obtainable at prices in proportion to the size of the carriage and the character of finish.

For carrying several passengers in a private carriage the Opera 'Bus is a regular stock type. It is finely finished, with plate glass upper panels in the sides and ends, and is listed at \$2,000. A more public type of passenger electric vehicle is the Wagonette, carrying twelve persons, including the driver. The stock type is an open carriage with canopy top, not unlike a combination of the surrey and tonneau types.

Almost any special requirement can be met by the designer of the electric vehicle, the form of motive power lending itself readily to varied constructions. Some makers, for example, have been very successful in building miniature runabouts for children's use. They can be more easily operated and are far safer in service than the bicycle or pony chaise.

Charles A. Ott, of Pawtucket, R. I., has patented a safety stop for steam carriages, consisting of a supplementary valve in the



BAKER ELECTRIC STANHOPE.

main steam line, which valve is arranged to be opened by the weight of the operator on the seat, and closed automatically by a spring when the seat is empty.

Eight Cylinder Direct-Driving Gasoline Motor.

As a bold experiment undertaken with a view to the total abolishment of change-speed gearing, the French C., G. & V. eight-cylinder, 40 horse power car continues to interest all builders of automobiles. With the exception of one very important point, on which the manufacturers still maintain secrecy, the construction details of this car are made known. The one point on which M. Léo Robida, who describes the construction in *Le Vélo*, is silent is the clutch connecting the motor shaft directly with the differential gear on the countershaft, from which the rear wheels are driven by chains and sprockets in the usual manner. This connection must necessarily be so yielding that it will be possible to start and connect the motor without imparting a rude shock, just as in other cars it is necessary to start on a low gear so that the resistance shall not be so great as to stall the motor immediately or the shock so great as to cause breakage of gear teeth. Among the expedients adopted for easing the application of power when the resistance is momentarily great that most commonly employed consists in maneuvering the cone clutch so as to have it slip somewhat before it is tightened positively; another consists in mounting the motor flywheel elastically as in Packard cars, and still an-

seems hardly likely that they would employ spring devices, in which there is always a reaction and which are therefore more useful when some obstruction is encountered in the road than at the start of a car which the operator must be enabled

in one "carter," or boxing, which is mounted on the chassis by three double girder arms. The motor shaft, which rotates in five bearings, consists in reality of two pieces, one for each of the cylinder groups, and connected by a sleeve. While



BUFFALO ELECTRIC SURREY SEATING FOUR PERSONS.

to make very slow and gradual. A very powerful, lubricated, metal to metal clutch, susceptible of finely graduated application,

each of the groups operates as would an ordinary four-cylinder motor, the sleeve connection of the shafts forces the two groups to act in unison, causing every movement in one of the groups to be reproduced in the other group one-half shaft revolution later.

The same effect could of course be obtained by having one continuous shaft, but the machining of an eight crank shaft would present serious practical difficulties.

The motor speed—which in this car holds a fixed relation to the vehicle speed, as in a motor bicycle, save for sliding of the clutch—is regulated by a butterfly valve acting on the admission of the explosive gas mixture, and here the engineer who describes the car records what French automobile builders have learned later than many American constructors, when he proclaims the principle (learned in France only during the past year) that "the timing of the spark in an explosion motor must vary, evidently, but the variations should follow those of the motor's speed and not be the cause of them." One avoids hereby, he adds in explanation, "to fatigue the motor by the brutal explosions inseparable from excessive spark advancement." (Perfectly correct, but the importance of this observation was recognized by American builders several years ago, and embodied in American automobiles, though the full benefit was not obtained until improved carbureters or vaporizers and improved electric ignition made throttle control as reliable as the brutal effects obtained by spark shifting in conjunction with practically unvarying fuel feed.—Ed.)



COLUMBIA ELECTRIC RUNABOUT WITH PANEL SEAT AND BUGGY TOP.

other in transmitting the power to the driving wheels through an elastic medium as in Thornycroft heavy steam trucks. What the C., G. & V. firm is doing in this respect remains, as said, unknown, but it

is perhaps most likely to be their choice of expedients.

The known details are as follows: The eight-cylinder motor consists of two groups of four cylinders each, both encased

The C., G. & V. motor has gear-driven inlet valves, so that no valve spring resistance will interfere with the regularity of the fuel feed at extremely slow motor and piston speed. Its power decreases therefor less rapidly with the speed than that of a four-cylinder motor, the twice greater frequency of the power impulses being more helpful, the more regular the power development is in each cylinder.

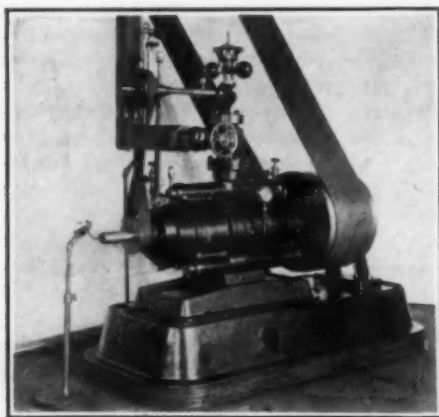
The informant states that the power even at as low a speed as slightly above fifty revolutions, is sufficient to overcome the constant resistance (friction, etc.) and move the car. At 800 revolutions, he says, the motor develops 52 horse power (or 12 in excess of the nominal power of the engine), at 500 revolutions, 28 horse power, and at 250 still 12 horse power instead of the 5 horse power produced at this motor speed in a four-cylinder engine of the same indicated power.

The cylinders are made of steel and much lighter than cast ones, and the water jacket is of pressed sheet metal.

Cooley Cycloidal Engine.

A semi-public demonstration of the Cooley cycloidal engine was given at the works of the Cooley Cycloidal Engine Company, in Boston, on March 18, before representatives of the Massachusetts Institute of Technology, and of various technical publications. Several engines were shown, of rated capacity from 10 to 70 horse power, and also several steam carriages which had been equipped with engines of this make.

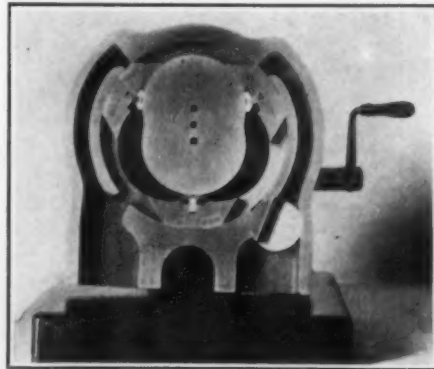
Some tests have been made on these engines by Prof. Edward F. Miller, of the Institute of Technology, and the demonstration opened with a brief explanation by Prof. Miller of the character of the tests, which included brake horse power



EXTERIOR OF COOLEY ENGINE.

and steam consumption. Prof. Miller declared that the performance of the engines had exceeded his expectations. Following this was an explanation by the inventor, John F. Cooley, of the principle of the engine. Of this no very clear report has reached us, but from the accom-

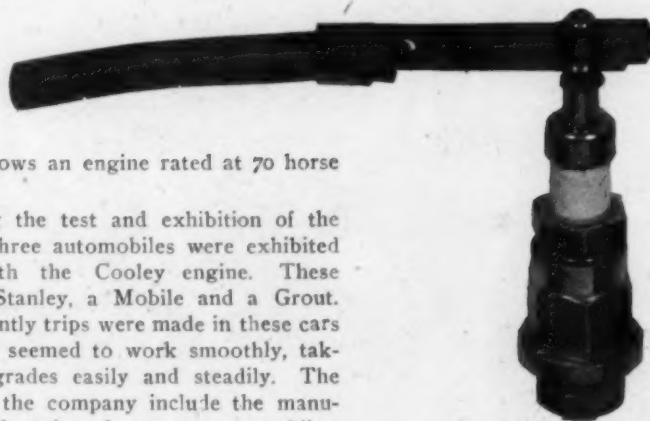
panying photograph, which shows a model of the engine in section, it would appear that the central member or "piston" revolves in one direction, while the surrounding member or cylinder, with the three-lobed recess, revolves in the opposite direction about an axis eccentric to that of the piston. Steam appears to be



SECTION OF CYCLOIDAL ENGINE.

admitted through the ports in the casing on the right hand side, and exhausted through the corresponding ports on the other side, the casing of course being stationary. The steam appears to be cut off by the rotating or oscillating valve at the lower right hand side of the section. Owing to the eccentricity of the two axes, the spaces included between the piston and the cylinder will increase and decrease alternately, and the steam is evidently admitted and expanded during the former stage, and exhausted during the latter.

Of the economy of the engine it is impossible to speak in the absence of data regarding the tests, but the engine appears to be a powerful one for its size, if one may judge from the other photograph,



TRACY SPARK PLUG CONNECTION.

New Spark Plug Connection.

An improved method of attaching the wire of the sparking system to the spark plug on gasoline engines fitted with jump spark ignition is shown in the accompanying photograph. This device has been patented by Joseph Tracy, of New York.

The fine copper strands of the insulated cable are attached to a soft brass strip perforated for this purpose. To this strip is riveted another shorter strip of hard, springy brass, the ends of both strips being formed to clamp the neck of the post. The latter, also of brass, has a round head preventing the clamp from shaking off and may be screwed into the top of any spark plug, as shown in the illustration. A variety of styles of post is kept in stock by the makers, each adapted to one of the standard plugs on the market, both home and foreign. The new post is simply screwed into the top of the plug in place of the present binding screw.

The principal advantage of the new attachment is that it entirely obviates the danger of the wire breaking, which so frequently happens when the wire is attached directly to the plug. The flexibility of the connection also permits of the ready disconnection of the wire from the plug, without tools or trouble, when the withdrawal of the plug for cleaning becomes necessary. The clamps grip the binding post so that a little play is possible, and in this way the advantages of the air gap in the circuit are brought into play without the addition of any other fittings.

W. K. Vanderbilt, Jr., August Belmont and William C. Whitney are reported to be interested in the purchase of large tracts of land on Long Island for development as an automobile speedway. The land runs parallel with the Long Island Railroad and the macadamized roads in Queens and Nassau counties.

Leopold E. Wagener, of Binghamton, N. Y., is planning to operate an automobile line from that city to his summer park in the town of Union, several miles outside of Binghamton. Two twenty-passenger steam vehicles made by the Daven-

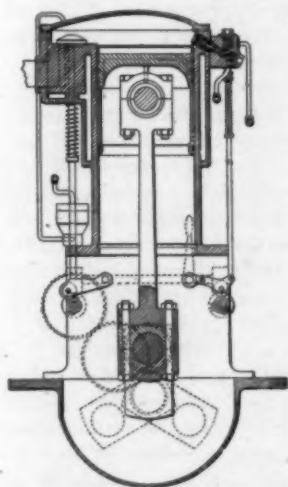
port Manufacturing Company, of Minneapolis, Minn., will be used. They will be up-to-date in every respect, with comfortable leather upholstery and a vestibule front for the driver. Twenty miles per hour will be their normal speed, the engines being 18 horse power.

Patents

Internal Combustion Engine.

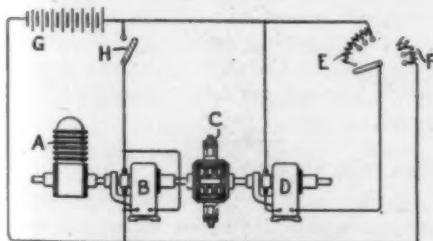
No. 722,629.—C. C. Riotte and C. R. Radcliffe, of New York.

This engine is an adaptation of the principle of the Diesel engine to compression pressures within the range of those ordi-



RIOTTE & RADCLIFFE ENGINE.

narly used. The fuel, which may be kerosene or crude petroleum, is sprayed into the combustion chamber by a jet of compressed air, as in the Diesel engine, but ignition is effected by impinging this oil on hot metal surfaces, as in most oil engines now used, instead of by the heat of abnormally high compression. The heated surfaces in the engine shown comprise an unjacketed cylinder head, and a plate supported on the piston head but insulated therefrom to permit it to become hot. Means are provided for varying the duration of the introduction of fuel for reversing the engine by means of a second set of exhaust cams, suitably located on the cam shaft, and having their sides beveled so that the rollers will readily mount them when the cams are shifted. An-



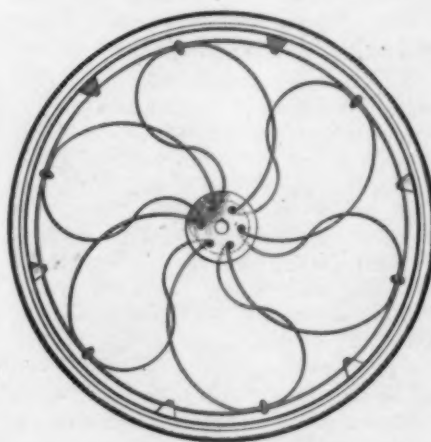
LEMP PROPELLING SYSTEM.

other set of cams, which may be thrown out of use when the engine is started, admits compressed air directly into the cylinders for the purpose of starting. For the same purpose the cylinder head is heated at first by a torch or other device to obtain the first ignition.

Combination Propelling System.

No. 723,168.—H. Lemp, of Lynn, Mass.

In this system variable speed is obtained by the differential movement of a motor running at constant speed and a machine which is interchangeably a motor or dynamo according to the speed of the vehicle; the effective driving speed being one-half the algebraic sum of the speeds of the above two machines. In the diagram *A* is an explosion motor, coupled directly to a shunt wound dynamo *B*, and also to one of the principal gears of a compensating gear *C*. This latter has nothing to do with the rear axle, but is used purely to obtain the differential driving speed above referred to. Coupled to the other main gear of *C* is a series wound dynamo-electric machine *D*, which may be either short-circuited upon itself through the resistance *E*, or put in circuit with the dynamo *B* through a variable resistance *F*. Connected in multiple with *B* is the storage battery *G*, which, by closing switch *H*, may be utilized to start the engine (by using the dynamo temporarily as a motor), but which normally receives current from



PROUVOST ELASTIC WHEEL.

the dynamo or delivers it to machine *D*, according to the resistance of the circuit.

Evidently if the shaft of *D* be held stationary while the engine runs, the driving speed of *C* will be one-half that of the motor. This condition is more or less approximated by short-circuiting *D* through less or more of the resistance *E*, in which condition it becomes a dynamo and resists turning. By connecting *D* into the main circuit through resistance *F*, it becomes a motor and turns with greater or less speed, according to the resistance. By reversing the current in the field of *D* the latter can be reversed, thus reversing (if *D* runs fast enough) the direction of the vehicle.

Elastic Wheel.

No. 722,432.—A. Prouvost, of Tourcoing, France.

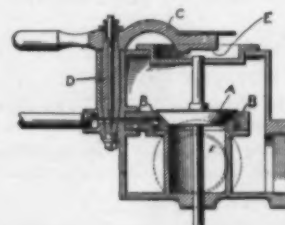
A wheel having elastic spokes made from strips of spring steel in the manner shown. The driving force is normally

clock-wise in the drawing, so that the spokes with a single curve are in tension and those with a double curve are more or less in compression.

Carbureters for Gasoline Engines.

No. 722,357.—H. A. Davis, of Philadelphia, Pa.

This carbureter is of a well-known type, in which the suction of the air lifts the



DAVIS CARBURETER.

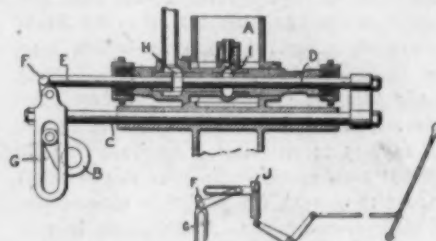
valve *A* and at the same time draws gasoline from one or more orifices, *B*. A special feature of this mechanism is in the regulator, which comprises an arm *C* on the stem *D*, which stem is adapted by its partial rotation to shut off the gasoline more or less. At the end *E* of arm *C*, it is widened out and has its base formed like a wedge, so that swinging arm *C* and its stem *D* one way or the other will simultaneously restrict or increase the admission of gasoline and the lift of valve *A*.

Positive Fuel Feed for Motors.

No. 722,431.—J. W. Packard, of Warren, Ohio.

In this apparatus *A* is the suction pipe, through which the mixture is drawn upward, *B* is a crank on the end of a rotating shaft, by which the stem *C* is reciprocated from side to side. The rod or piston *D* moves with *C*, and a plunger *E* is pushed alternately by *D* and by an abutment *F*, carried on the yoke *G*. Thus the fuel is drawn in at *H* and squeezed out at *I* by the relative motion of the piston and the plunger.

To regulate the amount of this relative motion, the abutment *F*, instead of being



PACKARD FEED REGULATOR.

rigidly attached to *G*, is pivoted thereto and rocked slightly by the mechanism shown on a reduced scale in lower drawing. In this mechanism *J* is a slide moving vertically in a guide and determining by its elevation the angle of inclination of the abutment *F*.

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SATURDAY, MARCH 28, 1903.

OUR ELECTRIC CARS.

So long as carriages are used mainly for the purpose of getting from one place to another not very far distant with certainty and comfort, and only comparatively seldom for the sake of experiencing that rapid succession of vivid impressions which is produced by long dashes over country roads at high speed, so long will a warm place be assured for the electric vehicle in the affections of those who possess private conveyances, and especially with the feminine portion of this class. The simple control, reliability and elegance of electric carriages and that immense advantage over all other forms of power or animal propulsion which may be inclusively called "cleanliness," have made this type of vehicle the ideal for leisurely transportation, within a radius of, say, 15 to 20 miles from home. This present restriction of distance is more apparent than real, for probably nine-tenths of all carriage travel is carried on in this or lesser radius.

For a time the fact has been eclipsed that the electric vehicle serves social and utility requirements almost exactly as they were served before by horses and carriages, while other automobiles have largely created a new field for themselves and a new public, and that the usefulness of the electric vehicle to persons of average habits and desires is therefore much

more firmly established than that of the car, with its unlimited traveling radius and strong demands on mechanical insight. Undoubtedly many have passed through the same phases as recorded by M. Santos-Dumont, the intrepid balloonist. "To be able to jump into my car and go straight to Rome or to St. Petersburg was an idea which had irresistible attraction to me," he said once in an interview, "and consequently I purchased every new automobile and tried its speed qualities thoroughly on the roads. But after a while I discovered that I did not really care to go to Rome or to St. Petersburg very often, and that I did enjoy to go to the Bois or to Fontainebleau or to some friend or club in the city pretty nearly every day, and as I wanted to go there as comfortably as possible, I bought an electric victoria. And it suited my wants exactly."

As nobody will contest the sportsmanship of the Brazilian, his fondness for the electric carriage will probably not be considered an evidence of effeminacy, but rather of the hard common sense which lurks behind his love of adventure.

LESS BRASS AND MORE SYMMETRY.

Bold and yet artistic effects may, of course, be obtained in automobiles, as well as in wearing apparel, by the strong contrast of garish colors and the glitter of polished metal, but it was discovered long before Polonius pronounced his "Rich, not gaudy" that these bold effects are best spared for those extraordinary occasions when pomp is in its proper place and when special precautions may be taken for not transgressing that indefinable line separating rich display from vulgar ostentation. The slightest discord in strong effects becomes irritating by repetition, and the most select gorgeousness easily lapses into the ridiculous when gnawed by the tooth of time or defiled by the grime of workaday conditions. A greasy chauffeur, a rusty axle, a crumpled tire flange, a torn mudguard and singed paint look twice as distressing against a background of shining brass trimmings and rainbow-hued enamels as in a setting that carries out the idea of wear and tear being expected.

Splendor immaculate has its charm, undoubtedly, if good taste is observed. A Roi des Belges car or Limousine in azure enamel and spotless white leather upholstery, with glistening front glass and polished headlights, looks attractive when it bowls along the boulevards with a festive and well-robed load of passengers. But it is not a "touring car." When it is exposed to the begriming influence of muddy dirt roads little remains of its elegance except the intention, and this applies even more strictly to cars in which the flashy features are not supported by evidence of very substantial construction, but are merely put on in imitation of ef-

fects noted on the most expensive vehicles. Elegance reduced to intention—be the reduction only temporary, even—carries no respect or impression of dignity to the onlooker, but acts like a red rag on a bull.

The unsophisticated rustic who sees a great slabsided structure studded with tinsel rushing through his village may not be able to analyze why the clumsy contours and inartistic lines of the average imitation touring car, including many imported cars, harmonize poorly with external "ornamentation," but he certainly receives the impression that there is little reason for making any concessions to that class of conveyances by special legislation. On the other hand, if the car embodies a well-proportioned regard for the utilities and reflects the work of the artist, rather than that of the decorator, in the pleasing geometrical configurations of its lines, the art value of such design may be lost on him, so far as his consciousness is concerned, but it still remains in the fact that he is *not irritated*, but, on the contrary, is rendered more amenable to sweet reasonableness with regard to such vehicles.

True art is soothing and inspires friendly feelings, while ostentatious display has the opposite effect.

While the American runabout type of automobiles may not, as a rule, be very artistic in general design, it is not overloaded with brassy flummery and keeps well within bounds of common sense. In some of the electric vehicles there is even a distinctly marked dignity—not so easily obtained where visible machinery must be considered. But there is also at present a tendency toward cheap French style, not only objectionable as a matter of taste but which imposes a great deal of unnecessary work on the owner or his help if it shall be kept at all respectable in appearance, and it is against this tendency that this article is written, in the belief that most of the money spent by the industry for ornamentation, before design has been more fully and harmoniously developed, is worse than wasted and could be applied with much better results in attracting mature artistic talent to the designer's shop when the *general lines* of a vehicle are laid out on the black-board.

WORM GEAR TRANSMISSION.

Considering the fact, which has been well established by recent investigations, that a properly designed worm gear compares favorably in point of efficiency with spur and bevel gearing, there seems to be room for inquiry as to why this form of gearing is so little used for transmission purposes in automobiles. Assuming a friction coefficient of .05, the combined efficiency of a properly designed worm and step is slightly over 86 per cent.; this being the value when the angle of the

Progress on the 1903 Racing Cars.

Staff Correspondence.

thread is about 40 to 45 degrees from the plane perpendicular to the axis of the gear. This is a much steeper angle than we are apt to picture to ourselves in thinking of the worm gearing, but it is the most efficient angle nevertheless, and the worm is not injured by the fact that the use of this angle practically necessitates converting it from a worm (i. e., with but one thread) into a spiral gear. The angle of greatest efficiency will be the same whether the gear is a worm or spiral. As the most convenient angle for laying out spiral gears is 45 degrees, it follows that this is generally the one which should be chosen. One useful result of using spiral gearing, in motor front gasoline or steam cars, would be to make it practicable to set the motor nearer the ground than can be done with the bevel gear shaft drive. This and other incidental advantages of spiral gearing would seem to make the system worth investigating.

Riders of motor bicycles in England have bethought themselves of the excellent opportunity for holding a motor bicycle race which is offered them in connection with the Gordon Bennett cup race. Taking advantage of the exceptional dispensation to indulge in the highest speeds over the cup race course for several days they propose to follow the large vehicles after these have been well started and obtain the benefits of the very elaborate organization for timing contestants and guarding traffic on the roads which will be in operation on that day. The project is meeting with enthusiasm among motor cyclists in Great Britain, France and Belgium.

New Books.

"Das Motor-Zweirad und seine Behandlung," by Wolfgang Vogel, with 62 illustrations, Berlin, 1902, 154 dd. pages, is a German primer intended for the instruction of those interested in motor bicycles. It is written in very popular style, and leads the reader through questions and answers to a practical understanding of the two-wheeled automobile. "Schule des Automobil-Fahrers" is another volume by the same author treating tricycles and automobiles in the same manner, in 189 octavo pages, with 112 illustrations. Both are published by Gustav Schmidt's Verlagsbuchhandlung, Berlin.

"Adressbuch der Automobil-Industrie," published by F. Walloch, Berlin, S. W. 61, gives classified and alphabetical lists of the automobile industry in Germany and also a directory of hotels in the principal towns of the empire. A list of automobile clubs and their officers and other data of record.

A proposal is under discussion for a special track for motor cars in the vicinity of London.

CLEVELAND, March 23.—Alexander Winton, R. E. Olds, of Detroit, and Charles B. Shanks left here yesterday for Florida to participate in the Daytona-Ormonde race meet this week. The Winton "Bullet" was shipped down by express last Saturday. A telegram from W. J. Stewart, president of the American Automobile Association, to Mr. Shanks, announced that the sanction for the meet was granted on Saturday, and a telegram from W. J. Morgan, at Daytona, reported that the prizes had arrived and were exceedingly handsome, and that the prospects were good for an interesting meet. Mr. Shanks intimated that something interesting in the way of record trials may come off before the opening of the regular programme on the 25th.

L. P. Mooers, of the Peerless Company, will not go down. He is temporarily laid up with a crippled leg and bruises received in an automobile mix-up in Philadelphia a week ago. Windsor T. White will not take part in the events, either, stating that he is too busy to spare the time.

Rapid progress has been made, it is intimated by Mr. Shanks, on the new Winton Gordon Bennett racing car, but Mr. Winton is so jealous of the secrets of construction that his experimental shop, where it is being built, is kept locked, and no one but Mr. Winton, Percy Owen and one or two of Winton's assistants has yet seen the machine to know anything of its details. Even Mr. Shanks himself, first lieutenant to Mr. Winton, has avoided exhibiting any inquisitiveness regarding it.

MOOER'S RACER NEARING COMPLETION

No such secrecy is preserved by Mr. Mooers, of the Peerless factory, who did not hesitate last Saturday to show the racing car he is building for the international contest. Good progress is being made on it, too, and Mr. Mooers says it will be finished in about a week. In general this machine follows the lines of the big Peerless, with the King of the Belgians body which was exhibited at the New York and Chicago shows, and which had just been received back at the factory from the Buffalo show on Saturday. This is to be the regular model for 1904 Peerless road cars.

The frame is of hammered channel steel, tapered at the ends and narrower in the forward half than at the rear. This is carried on semi-elliptic springs mounted on heavy axles, the forward one bent deeply downward to make room for the huge crank case of the big four-cylinder motor that is to drive the racing car. The frame will be carried on 28-inch artillery wood wheels of great strength and extra wide hubs, fitted with 1-2-inch ball bearings. The line axle drives from the outside

of the hubs with which it has movable connection, so that none of the weight is carried by the driving axle.

The motor is of the four-cylinder vertical type, placed in front. The cylinders are of 6-inch, or approximately 6-inch bore. The intake and exhaust valves are on opposite sides of the heads and are all mechanically operated by cams on 2 to 1 shafts turned inside the crank case by fiber spur wheels at the front of the engine meshing with a gear on the crankshaft end.

The clutch is of the cone type fitting in the face of the flywheel, transmission is thorough sliding gears under the foot-board and drive is by bevel gears at the differential thorough direct shaft.

FISHER'S AND KISER'S BIG CARS.

Two racing cars that will be the largest yet constructed in this country are being built in the works of the Mohawk Cycle Co., at North Indianapolis, Ind. One was ordered by Carl Fisher, the leading automobile dealer of Indianapolis, and the other by Earl Kiser, the ex-bicycle racing champion, of Dayton, O. Each is costing \$5,000, of which \$1,000 was paid down before work was started on them. The working drawings were shown to the correspondent on Wednesday last, at which time the patterns for the motors were in the foundry. It was expected to have the cars completed by the 1st of May.

While bearing much similarity to each other in general design, there will be important differences between the two cars that, together with different methods of handling, may throw races to either should they be pitted against each other or be entered in the same event with other cars.

The motors are of the four-cylinder, double opposed horizontal type, 7 inches bore by 7 inches stroke, placed at the front of the machine. While built primarily for track use, they will have high and low speed gearing in the transmission. The frame, motor and body are hung low, with only six inches clearance of the ground below the radiator and flywheel. It is hoped to keep the total weight inside of 2,200 pounds. The hood takes up nearly half the frame length, while the cars have no other body than a single racing seat, set low and well back.

With these two immense machines added to the new cup racers building by Winton, Mooers, Matheson, H. S. Harkness (who has just had shipped to Brooklyn a pressed steel frame made by the Standard Welding Co. here at a cost of \$175), and the high-powered Mors, Mercedes, Panhard and other foreign cars in this country, the sport of automobile racing should be given tremendous impetus this season.

Dealers' Automobile Show in Boston.

Staff Correspondence.

BOSTON, March 21.—Symphony Hall was thronged every night this week to a state of uncomfortable crowding by visi-

really up-to-date position in the matter of selling automobiles. If it has been behind the times, those days are over now,

purchasers. Concerts were given each afternoon and evening by the Salem Cadet Band. The Boston Automobile Dealers' Association, just now much interested in the automobile bills pending in the Legislature, had one whole page in the official catalogue devoted to an argu-



INTERIOR VIEW IN SYMPHONY HALL, BOSTON, DURING THE DEALER'S AUTOMOBILE SHOW.

tors to Boston's official automobile show. From the first night, when 3,000 spectators inspected the vehicles on exhibition. So successful has the occasion been in this respect that the new Boston Automobile Dealers' Association, which promoted the show, feels so elated that it has already decided to repeat the show next spring in the same hall. This show is even pronounced to have marked the awakening of Boston to the automobile situation.

The show was remarkable for its compactness, its beauty of arrangement and its completeness, for while there was too little room between exhibits to give proper space for those who wished to see, there were few of the well-known and leading makes of cars which were not shown in their latest models, and on this point alone the show was a revelation as to Boston's

for the show made it evident to all that the local dealers have all the best vehicles that can be bought in the country.

GENERAL REVIEW OF THE SHOW.

Not a commercial vehicle was shown. Except for the electrics, which included broughams and coupes, everything on view was of the runabout, surrey or touring car pattern, but every carriage was of the 1903 model. Parts exhibitors were few, but there were several good displays of clothing and accessories. Few exhibits would be novel to one who had visited the New York show; some were exact reproductions of the Madison Square Garden exhibits.

No moving carriages were shown, but agents had duplicate cars on the avenue outside, and spent much time each afternoon giving demonstrations to prospective

ment for more road privileges for automobiles. On the wall of the show hall, too, were three mottoes, as follows:

"An automobile going twenty miles an hour is safer than a horse. It can't run away."

"In ten years there will not be a horse-drawn vehicle in Paris."

"Sanitary laws do not permit the keeping of cows, sheep and pigs within the city. This will soon apply to horses also. Keep the animals in the country, where they belong."

PREMIER APPEARANCES.

There were only four cars in the Boston show which were not on exhibit at New York. These were the Stanley steamer, made by the well-known Newton builders, and put out this year with direct gearing so that it has come to be spoken of as the

"Chainless;" the Buffum, a medium weight touring car; the Commonwealth and the Crompton, all gasoline machines. The last is put out by the same company as the Crompton loom, which is well known in lines of mill machinery. A pair of Renault cars were placed in one of the corridors, but did not attract a great deal of attention.

BOX OFFICE CLEARS \$6,000.

The best exhibit of any from the point of view of the promoters, was the box office, for, whereas the other Boston automobile show this year dropped \$1,500 for the New England Automobile Association, this show of the Boston Automobile Dealers' Association cleaned up fully \$6,000 besides doing a business measured in sales of cars of probably \$200,000 at least. The dealers made no secret of jubilation at their success.

to be permanently or for the time being at Boston theaters. About 150 of these tickets were presented at the gate boxes during the afternoon, but the attendance of the general public was tremendous and the hall was crowded so that the theater people were lost in the throng.

The visit of Mrs. Nelson A. Miles, wife of the distinguished general, who was present in the city at the celebration of British Evacuation Day, was a matter of interest Tuesday evening. Mrs. Miles was accompanied by ex-Judge Dewey, his brother and Mrs. Dewey, Miss Dewey and Colonel Reber.

FOSDICK DINNER TO NEWSPAPER MEN.

An interesting affair of Wednesday was the dinner party given to newspaper men at Auburndale. The party consisted of about twenty men from the local dailies and the trade journals, and was arranged

H. C. Coleman a fifth. The cars started from Symphony Hall at 11:30 a. m. and the run was through Allston and Brighton to Auburndale, where dinner was served, and there were informal speeches by Mr. Fosdick, J. C. Kerrison of the Boston Herald, J. L. Poole of Detroit, Col. Thomas of Buffalo, and others.

Police "traps" on the streets around Symphony Hall early began to interfere with the great game of demonstration, in which, aided by fine weather all the week, upward of twenty-five autos took part. The old trap on Commonwealth avenue was presided over by its usual blue-coated attendant, and operators soon got the tip that other traps had been set on Huntington avenue and Beacon street, and more than one man got into trouble. In fact, before the middle of the week it seemed as if almost every demonstrator would be



SYMPHONY HALL, BOSTON, DURING THE AUTOMOBILE SHOW—LOOKING TOWARD THE GREAT ORGAN.

There was only one "special" day during the week. That was "theatrical afternoon," Thursday, for which 500 invitations had been issued to the various actresses, actors and managers who chanced

by Harry Fosdick, the eastern manager for the Winton Company. Mr. Fosdick had five big touring cars. He drove one, Kenneth A. Skinner drove another, J. S. Dale a third, H. W. Taylor a fourth and

in limbo before the show ended unless the police "let up" on them. But after a time the demonstrators grew careful, or avoided the streets where the traps were set, and arrests and hold-ups decreased.

FIRST ANNUAL DINNER OF BOSTON DEALERS.

NEARLY EIGHTY DINERS PRESENT

Members Much Elated by Success of Symphony Hall Show, Which Will Be Repeated—Prominent Speakers Point Out Dangers of Anti-Automobile Legislation.

Special Correspondence.

BOSTON, March 21.—One of the best features of the first "automobile week" ever held in Boston, which is now closing, was the first annual dinner of the Boston Automobile Dealers' Association, held in the Hotel Lenox the night of March 20. There were nearly eighty dealers, manufacturers and enthusiasts present, although club men were few. The after-dinner speaking, which was entirely informal, showed that the dealers are elated over the fine showing made at their Symphony Hall exhibition. This show is said to have netted them, through the box office alone, about \$6,000, and has determined them to hold another exhibition next year in Symphony Hall instead of trying to run a combination carnival and automobile show in Mechanics Building.

President Kenneth A. Skinner presided, and with him at the head table were Mr. Charles J. Glidden, of the Massachusetts Automobile Club, who made the 5,500-mile tour of Europe last year; Mr. E. W. Pope; ex-Judge H. S. Dewey, counsel on the automobile bills, and Messrs. W. E. Eldridge, G. G. Reed, Harry Fosdick and F. E. Randall, of the show committee. Mr. Skinner called the diners to order at about 11.45 p. m., and after a few congratulatory words introduced Mr. Fosdick as toastmaster.

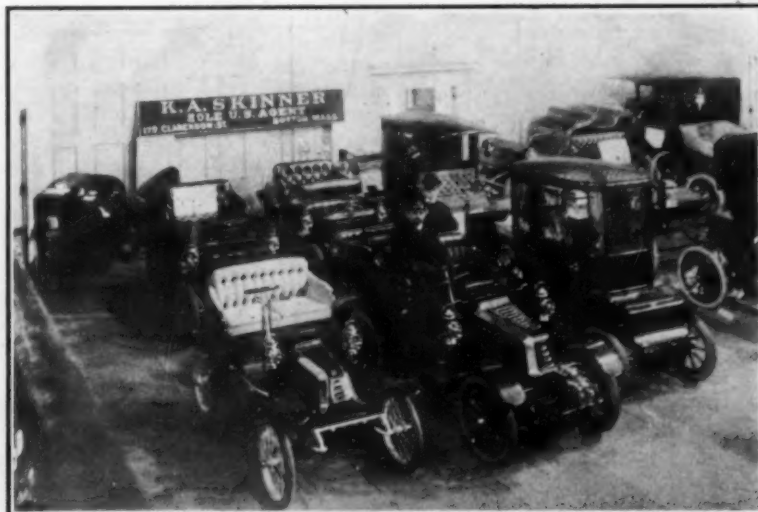
J. C. Kerrison responded when the toastmaster paid his compliments to the newspapers, and counseled the dealers not to allow themselves to be "too busy to talk" when asked a question by some reporter. "If you don't give the reporter news," he said, "he'll make it."

DEALERS, MAKERS AND USERS PRESENT.

Those present were E. W. Pope, J. C. Robinson, F. E. Randall, G. G. Reed, A. P. Underhill, F. J. Read, R. F. Kelsey, Kenneth A. Skinner, H. B. Shattuck, F. E. Stanley, Sam Shuman, Edwin L. Smith, Mortimer F. Smith, F. G. Saylor, J. S. Pratt, W. E. Upton, Charles E. Whitten, Lieutenant Ames, J. J. Donovan, J. C. Kerrison, Charles J. Glidden, F. H. Tudor, H. L. Lodge, T. W. Goodridge, E. N. Goss, J. J. Coakley, W. E. Eldridge, W. I. Wilson, J. E. MacIntosh, Ralph Lewis, H. L. Davis, L. Van Steenburg, F. A. LaRoche, E. H. Corson, D. E. Smith, W. and C. Bates, B. F. Blaney, Mr. Bean, Edward N. Bliss, H. H. Buffum, A. R. Bangs, J. C. Crompton, Ross Drisko, Bert Snow, W. E. Helfer, Fred Hunt, A. T. White, A. T. Fuller, Harry Fosdick, W. H. Field, William

Gray, George Corbin, George H. Lowe, Winsor T. White, Mr. Sterns, H. E. Marvel, J. Snow, J. H. McAlman, C. C. Hilderbrand, E. R. Thomas, F. M. Hoblitt, J. L. Poole, A. E. Hughes, W. B. Hurlburt, W. E. Metzger, Walter Sterns, A. T.

automobiles and motor cycles; W. C. Jaynes, Winton touring cars and Oldsmobiles; Conrad Motor Car Co., a steam bus, delivery wagon and touring car; A. Judson Wells, General cars; International Motor Co., Waverley vehicles; Buffalo



K. A. SKINNER'S DE DION EXHIBIT AT BOSTON SHOW.

Robey, B. F. Dingley, J. S. Pratt, Fred O'Connell, J. H. Davis, Louis Smith, W. H. Kirkpatrick, E. B. Olmstead, W. I. Relf, O. L. Stevens, F. F. Weston, G. H. Kimball, W. E. Hadley.

MANY SALES REPORTED AT THE BUFFALO AUTOMOBILE SHOW.

Special Correspondence.

BUFFALO, N. Y., March 20.—Larger sales than at any other show in this country this year with the exception of the Madison Square Garden event, in New York city, are claimed for the Automobile Show which closed last Saturday night in the city convention hall. Conservative figures place the amount of business done in retail sales between \$250,000 and \$300,000. Practically all of the vehicles sold went to local enthusiasts, and the business was about equally divided among the forty-four exhibitors.

All of the exhibits were in place by the middle of the week and the crowds in attendance increased every day the show lasted. Although Manager Wagner professes disappointment in the week's attendance the total admissions were more than 20,000. It is probable that the show will be made an annual fixture.

An exhibit and stand which attracted probably the most attention at the show was that of the Centaur Motor Vehicle Co., including besides its own type of electric vehicles, the Yale, Toledo, Cadillac, American and Searchmont cars. Another attractive exhibit was that of C. W. Roe, showing the Autocar and the Baker, Northern and Packard vehicles.

Other exhibitors and their attractions were as follows: E. R. Thomas Motor Co.,

Automobile Exchange, Haynes-Apperson cars; D. H. Lewis, Ramblers; Foster Automobile Co., a light roadster; Knox Automobile Co., one of its air-cooled cars; Prescott Automobile Manufacturing Co., Pierce Motor Vehicle Co., a ladies' phaeton; Geneva Automobile Co., Eckhard & Souter Co., touring car; Morlock Automobile Co., a gasoline runabout; National Electric Vehicle Co., touring car and Stanhope; Ripper Motor Carriage Co., motorettes and parts; Shaeffer-Bunce Co., of Lockport, N. Y., running gear; O. K. Machine Co., transmission gears; Buffalo Gasoline Motor Co., motors; Truscott Boat Co., F. W. Sherman, agent, gasoline launch and supplies; Standard Anti-Friction Equipment Co., Diamond Rubber Co., Twentieth Century Lamp Co., Fisk Rubber Co., National Carbon Co., National Battery Co., H. H. Franklin Co.

MILWAUKEE CLUB PROMOTING AUTO SHOW FOR MAY 4-11.

Special Correspondence.

MILWAUKEE, March 21.—Plans are now being formulated for the first automobile show ever held in Wisconsin, to be given the first week in May, under the auspices of the Milwaukee Automobile Club. It is to be held either in the Exposition Building or on the Fair Grounds. Subscriptions are now being solicited from manufacturers and others who are interested, and definite plans for the event will be formulated at a future meeting of the club. The result of the work so far done indicates that great interest is taken in the project by local automobilists and those who are at the head of the project

hope to make the show a complete success.

The automobile club now has a membership of seventy-five and is steadily growing. The members are enthusiastic over the proposed exhibition and there is no doubt that it will be made a social event of importance. A large sale of automobiles is expected during the coming spring and summer, and this will cause a large increase in the membership of the club.

THIRD ANNUAL AUTO SHOW OPENED IN WASHINGTON.

Special Correspondence.

WASHINGTON, D. C., March 23.—The third annual local automobile exhibition, promoted by the Washington Automobile Association, was opened to-night in the Light Infantry Armory without ceremony. Col. Albert A. Pope was to have opened it with an address upon the automobile industry, and its marvelous development in this country, but he telegraphed to Manager Washington that it was impossible for him to attend the opening, whereat many residents were disappointed, as Col. Pope has a large acquaintance here.

The armory is well adapted to the present purpose, being square and large. The building is artistically decorated, the entrance being draped in white and hung with festoons of smilax, while the hall is aflame with electric lights and red, white and blue bunting and the American flag.

The opening night was distinctly a society event, and throughout the well-

spring night succeeding a three days' downpour of rain.

The complete success of the opening was somewhat marred by the incompleteness of some of the exhibits, but the crowd accepted the excuses offered and proceeded to get all the information they could from the dealers.

An orchestra plays throughout each evening, dividing interest with a squad of soldiers from the Northwestern Military Academy, who have an automobile battery on exhibition, and who give a drill each evening with it.

The demonstration vehicles kept outside of the building made a hit with the crowd and there was a constant stream of applicants for a spin around the White House Park, which adjoins the armory.

NATIONAL SHOWS DISCUSSED BY N. A. A. M. EXECUTIVE COMMITTEE.

The matter of national exhibitions occupied most of the attention of the members of the National Association of Automobile Manufacturers at a meeting of the executive committee following a special meeting of the members of that organization held on March 18 for the purpose of adopting several changes in the constitution and by-laws to remove some slight inconsistencies and to bring it up-to-date and into harmony with all questions.

The suggestion to hold but one national show in the future, and that in New York, was made and received the attention of the committee, some members of which favored such a move, while it was opposed

Louis Exposition next year was discussed. President Budlong explained that the number of replies received from members on the matter of exhibiting indicated that there was a very good prospect of the efforts of the association being crowned with success. He explained that patriotic motives, if nothing else, should actuate members to exhibit, as it would not do to let the French makers have the only representative exhibit. The association is outlining a plan for lessening the expense, while at the same time enhancing the benefits to be derived from the exhibits. The N. A. A. M. proposes to engage space at St. Louis and to look after the exhibits after they are installed, so that the cost to individual manufacturers will be extremely low. Attendants will be provided, but exhibitors, if they prefer, may have their own experts in attendance to explain the features of the different cars and to furnish any information concerning them that is desired.

A committee was appointed to consider the entire "chauffeur" question.

A number of firms were elected to membership.

Private Steel Rail Speed Course.

The special committee of the Automobile Club of America on steel rail experiments is now trying to secure the privilege of laying the remaining portion of nearly one mile of the experimental flat rails donated by President Schwab, of the U. S. Steel Corporation, in some country place outside of Manhattan Borough, to be used as a private speedway for automobiles. According to Gen. Roy Stone, of the committee, the plans to lay stretches of the rails in Seventh avenue, as was done last fall in Murray street, have been interfered with by the letting of contracts for the repaving of the avenue uptown, and it is now proposed to use the remaining rails for a private straightaway speeding course, if possible, near Creedmoor Rifle Range, in Queens County. The place selected is on the Kissam farm. The rails will be laid across the meadow over a kilometer course, with grass between, and the course will be strictly private, rental being paid for the privilege. The object is to test the suitability of the present form of rail (one foot wide, flat and with flanged edges) for fast driving, and also to determine whether, in long stretches, any allowance must be made for expansion and contraction. The Murray street section is too short for this.

OTHER CLUB DOINGS.

Many valuable suggestions are being received by Secretary Butler of the Automobile Club of America from those to whom copies of the prospectus of the club's proposed commercial vehicle reliability contest in May were present. These suggestions will be incorporated in the detailed rules for the contest which will shortly be issued.



LIGHT INFANTRY ARMORY, WHERE WASHINGTON SHOW IS HELD.

groomed crowd one could see many men who have won distinction in diplomacy, statesmanship, in the army and navy and in the business and professional world. The weather conditions were good, a fine

by others. Finally a special committee was appointed to consider the entire matter and to report at a future meeting.

The question of making a creditable display of American automobiles at the St.

Power Boat Association Amends Rules.

Representatives of seventeen yacht clubs of Greater New York and vicinity were present at the recent meeting of the American Power Boat Association, in the house of the Columbia Yacht Club, at the foot of West Eighty-sixth street, Wednesday evening, March 18. The enrollment of twenty-two clubs was announced, most of them having already elected their representatives in the association on the basis agreed upon, of one representative to every one hundred members.

ELECTION OF OFFICERS.

The election of officers was planned for this meeting, but so much time was taken up in discussing other matters that it was postponed until the next meeting, Wednesday evening, April 29, in the Columbia Yacht Club house, which has been offered the association for temporary headquarters. A ticket which is likely to go through when the election occurs, however, was suggested, as follows: President, W. H. Ketcham; Treasurer, A. B. Cole; Secretary, J. H. McIntosh; Measurer, H. J. Gielow. Mr. Ketcham and Mr. McIntosh are members of the Columbia Yacht Club; Mr. Cole represents the Manhasset Bay Yacht Club, and Mr. Gielow is a well-known marine designer and member of the Atlantic Yacht Club.

CHANGES IN THE RULES.

Several changes in the racing rules were made. In Rule III, section 4, relating to the method of obtaining the horse power of a motor, it was decided that in the case of electric motors 750 watts should equal 1 horse power instead of 950, as was first decided upon. In gasoline explosive engines the formula for calculating their power, which originally read "by multiplying (A) the area of one piston in square inches by the number (N) of cylinders, multiplied by the stroke (S) in feet, multiplied by the number of revolutions (R) per minute and divided by a constant (C) of 1,000 for four-cycle and 600 for two-cycle engines," was changed so that the constant for two-cycle engines should be increased to 900. Both these changes were the result of exhaustive measurements and calculations by members of the association, and it is now believed that the rules as amended are as complete and thoroughly fair as can be found to exist either in this country or across the water.

The only other change was the cutting out of an unnecessary clause in the rule relating to right of way.

COMMITTEE APPOINTED.

Messrs. Frank Bowne Jones, Edward M. MacLellan and E. W. Graef were appointed as a committee to confer with the National Board of Steam Navigation concerning the bill recently introduced in the Assembly at Albany regarding the licens-

ing of persons in charge of motor boats. The committee opposes the bill proposed, but is desirous of securing the enactment of some national law governing the inspection of motor boats.

YACHT CLUBS ENROLLED.

The yacht clubs now enrolled in the association and their representatives are as follows: Newark, Hardy Bush; Manhasset Bay, A. B. Cole, E. M. MacLellan; Shattemuc, Ossining, Dr. E. B. Sherwood; Passaic River, Harrison, N. J., A. B. Kranich; Shenandoah, Troy, W. S. Howard; Canarsie, Jamaica Bay, A. C. Macey; Atlantic, H. J. Gielow, Charles E. Schuyler; Pavonia, W. A. Ward, V. Himmer; American (representatives not yet elected); Albany, Dr. M. L. Rowe; Poughkeepsie (representatives not yet elected); Hempstead Harbor, Ward Dickson; Brooklyn, E. W. Graef, J. E. Haviland; Indian Harbor, F. B. Jones, Charles E. Sims, Jr., T. G. McCahill, E. W. Wheeler; Columbia, W. H. Ketcham, J. H. McIntosh, W. G. McCrear, J. H. Cote; Yonkers Corinthians, James Watson, Walter Blackburn; Yonkers Yacht Club, Walter Strang, Stephen Hasbrouk; Norwalk, Col. F. A. Hill, H. H. Mossman; New Rochelle, L. D. Huntingdon, Jr., George E. Edwards, James D. Sparkman; Rhode Island, F. S. Not; Stuyvesant (representatives not yet elected); Knickerbocker, Charles Coughtry, F. H. Stillman.

Besides these, letters indicating a desire to join the association have been received from these other clubs: Audubon, Harlem, Sea Cliff, Philadelphia, Penataquit Corinthians, Horseshoe Harbor, Syracuse, Buffalo, Lake George Regatta Association, Stamford, New Haven and Middletown, Conn.; Springfield and American, of Newburyport, Mass.

CUP FOR INTERNATIONAL RACE OF MOTOR BOATS IN IRISH WATERS.

Secretary S. M. Butler, of the Automobile Club of America, and W. H. Ketcham, temporary president of the recently organized American Power Boat Association, have received letters from Secretary C. Johnson, of the Royal Automobile Club of Great Britain, announcing that Albert Harmsworth, editor of the *London Daily Mail*, who is an enthusiastic motorist and a member of the club, has presented it with an international cup to be raced for annually by motor boats. It is proposed that the first race shall take place in Queenstown Harbor, Ireland, in connection with the international automobile championship race for the Gordon Bennett cup, which will be held over an Irish course about July 7.

Secretary Johnson writes that a marine motor sub-committee has been appointed to draw up rules and regulations and to

prepare a programme for the event. He asks for the names of any institutions in the country corresponding to the Marine Motor branch of the British club, as he desires to obtain the constitutions of such organizations and other rules. Secretary Johnson also desires the names of manufacturers of motor boats in this country who might be interested in such an event.

Mr. W. H. Ketcham, who is the temporary president of the American Power Boat Association, and will probably be chosen as the permanent incumbent of that office, expressed much interest and enthusiasm over the prospect of such an event, in conversation with a representative of *THE AUTOMOBILE*, and declared that the association would use all its influence to interest American motor boat builders and owners in the proposed race. The possibility that an American motor boat may take the international cup on the water, while an American automobile may be winning from its English, French and German competitors over the roads of the Emerald Isle, has aroused similar interest among the members of the association and it will be surprising if there are not some American entries for the race. There are several boats now building in yards all along the coast, whose engines should produce high enough speed to qualify them for such an event, to say nothing of those whose racing powers have already been demonstrated.

Night Speeding in Jersey.

The attention of the Automobile Club of America has been called to the fact that some unknown automobilists are using the Hudson County Boulevard, in New Jersey, as a nocturnal speedway. On the supposition that members of the club had been putting their machines to their top speed on this course after nightfall when travel is reduced and police vigilance relaxed, a notice was posted on the club bulletin board asking that the practice be stopped, as prejudicial to the use of automobiles in New Jersey.

None of the members of the club, however, knew anything about any such nightly speed trials, and it is said that the automobilists seen on the boulevard were drivers of cars owned in New York who, according to report, take their employers' machines secretly by night over to Jersey and there try them out against each other. One chauffeur is credited with saying that weekly race meets of this sort have been held by the operators.

The latest mail brings emphatic denial of the report chronicled in last week's issue to the effect that the Mercedes cars entered for the Paris-Madrid race would have a wheel base of 5 meters, or over 15 feet. Mr. Jellineck, of the Daimler-Motoren-Gesellschaft, now writes from Canstatt branding the report as a *canard*, and states that the cars will be only 4 meters long over all.

Opening of the Racing Season.

W. J. Stewart, chairman of the racing board of the American Automobile Association, has finally succeeded in straightening out the Florida race meet tangle and adjusting whatever differences there were between the Daytona Automobile Club and the Florida Automobile Association over the promotion of the affair. A sanction was granted to the latter organization on Friday last and the Daytona Club will give some of the prizes and participate in the management of the meet.

PRELIMINARY RECORD TRIALS.

The three days' tournament is to be run on the beach between Daytona and Ormonde on Thursday, Friday and Saturday of this week, though some preliminary try-outs likely to produce a crop of new records were expected on Tuesday and Wednesday.

Five or six races and trials are scheduled to be run each day. The tournament is to open with a floral parade on Thursday. The principal events on the programme are:

THREE DAYS' PROGRAM.

First Day—Winton against the mile record, Hedstrom for the mile motor cycle record, and a land yacht race.

Second Day—Five miles open to all, for the Ormonde Challenge Cup; R. E. Olds for a mile record for automobiles under 1,000 pounds; five miles for motor cycles, and a race for Oldsmobiles owned in Florida.

Third Day—Ten miles, open to all, for the Florida East Coast Cup; three miles for motor cycles, and race for steam and gasoline cars under 5 horse power.

There will be record trials each day at distances from a mile to twenty-five miles, and special time trials for touring cars.

DONORS OF THE PRIZES.

Among the contributors of the prizes, which aggregate \$1,500 in value, are the two clubs, the Seaboard Air Line, the Florida East Coast Railway and the Olds Motor Works. The timing will probably be done by a Mors timing machine, arrangements having been made by the Western Union Telegraph Company to stretch a line from the start to the various finishing points.

Chief among the machines that are to attempt record breaking are the Winton "Bullet," R. E. Olds' new Oldsmobile 15 horse power racer, and Oscar Hedstrom's Indian motor cycle racer.

PROMINENT COMPETITORS.

It is understood that in addition to the "Bullet" one of the Winton international cup racers was shipped to Ormonde by express on Saturday for a trial; that Percy Owen would go in the Winton party with Alexander Winton, Charles B. Shanks and R. E. Olds; that S. M. Butler, secretary of the A. A. A., would take

charge of the Mors timing apparatus, and that H. S. Harkness would be a competitor and drive his Mercedes-Simplex, which won races at Brighton Beach and the Western tracks last season.

Paul Rainey (45 horse power Mercedes) and Roy Rainey (40 horse power Panhard) are sure competitors, and Oscar Hedstrom is to take his Indian motor cycle down for the races and record trials of that class.

The Florida East Coast Beach, at the point selected for the races and trials, presents a broad, dead level stretch for twenty-five miles. Under favorable wind and weather conditions new American records are expected and new world's straightaway figures are possible.

Special Telegram.

ORMOND, Fla., March 24.—Great interest is manifest in the automobile tournament here from points along the coast from Jacksonville to Palm Beach. The races have delayed the late season departure of Southern visitors and crowds are beginning to arrive to-night at the Ormond and Daytona Hotels. The Winton "Bullet" and the 1,000-pound Oldsmobile racer have arrived and the Winton party, including R. E. Olds, is expected to-night. To-morrow will be devoted to practice runs and trials against time over short distances. In addition to the visitors many motorists from Daytona and Jacksonville will compete in the races. The handsome prizes offered are on exhibition.

A spin to-day over part of the marvelous course proved it all that has been claimed, and it is evident that the creation of new American records will be easy and world's records possible. The finishes of the races will be alternately at Daytona and Ormond, while the direction of the record trials will be determined by the wind.

There is already talk of holding annual tournaments, and year-around record trials are being planned. Perfect safety is assured in the events for this week by plans for confining the spectators to the sand dunes.

CHARLES JARROTT WANTS TO RACE IN THIS COUNTRY.

Special Correspondence.

SYRACUSE, March 21.—C. A. Benjamin, chairman of the racing committee of the Syracuse Automobile Club, has received the following letter from Charles Jarrott, the champion automobilist of England:

"I desire you to fix up a racing schedule for me in America to be run off after the James Gordon Bennett Cup in July. I can come over with a couple or three carriages and take part in, say, half a dozen meetings. I will enter a series of match races with any prominent American or I can arrange to bring a party of three

or four from this side of the water. It seems a long time since I had the pleasure of seeing you last, and your promise to visit England has not been kept; nevertheless I look forward with great interest to the pleasure of coming to America this summer."

Mr. Benjamin hopes to match Jarrott with Winton at the State Fair races to be held in this city in September, or with Fournier if he comes back to this country. Jarrott is having a Napier car built especially for his use this season and will bring it over. He writes that he thinks it will be the fastest car ever built. Jarrott also writes that he met Fournier in Paris recently and learned from him that the match with Alexander Winton is on the square. He states that he would like to race the winner of this event if the match could be arranged.

AUTOMOBILE BILLS ARE COMBINED IN ALBANY.

Special Correspondence.

ALBANY, March 24.—President Shattuck, of the Automobile Club of America, and ex-Senator Cocks, of Nassau, were here to-day and had the amended Doughty automobile regulation bill incorporated with the Bailey bill in the Senate Finance Committee, and saw Senator Malby, the chairman, who agreed to put the bill out of committee. The bill went to the Finance Committee when it was first introduced because it provided for a State inspector who was to be paid by the State. That feature has been taken out to make the bill conform to the amended Doughty bill, which is the one all parties to the automobile controversy have agreed upon.

Earlier in the day A. R. Shattuck and W. Pierpont White went before the Assembly Judiciary Committee and argued for the constitutional good roads amendment, which proposes a \$50,000,000 State bond issue at the rate of \$5,000,000 a year for ten years. Mr. White made the principal argument for the proposition.

Another Gordon Bennett Cup.

A trophy somewhat similar to the Gordon Bennett cup has been offered to the Automobile Club of Great Britain and Ireland by the Hon. John Scott Montagu as second prize in the international race. This new trophy, which will be worth about \$1,000, will probably be ready for this year's race. The club has accepted the offer, and the prize, which will be called the Montagu trophy, will be vested in the club.

Rene de Knyff and two other delegates of the Automobile Club of France, to whom the matter was submitted, suggested that instead of going to the second man in the race, the Montagu trophy be awarded to the club whose team makes the best showing. This recommendation will probably be accepted.

CHAUFFEURS' UNION GIVES PLACE TO CLUB IN NEW YORK.

Although the "chauffeurs' union," which was to be formed among the employees of the automobile district of New York city expired at its second meeting, the movement for organization among the automobile operators is apparently a healthy one and has shown its strength in the last week in another direction, which promises to result in the formation of the "American Chauffeurs' Club," as it is proposed to call the new organization. The drivers who are promoting the new body are not the same as were interested in the "union," but are men qualified by training and experience to lead their fellows in an organization such as is proposed.

The chauffeurs' club was launched at a meeting Wednesday evening, March 18, in the storage and repair station of the Mobile Company of America, at Broadway and Fifty-fifth street. About 100 drivers were present, and several garage proprietors were also in attendance, the meeting being an open one. The tone of the proceedings was most reasonable and indicative of an association conducted in such a way as to work out for the best interests of both drivers and employers.

The plan of organization proposed, and which is likely to be adopted, proposes to grade the members according to skill, experience and reliability, into four classes. The classification of the members and the general conduct of the club is to be in the hands of a board of governors of the first grade, who will elect the members after their qualifications have been passed upon a committee on credentials, also composed of first grade men. A member will be entitled to promotion in grade upon passing an examination, to which he may be entitled every three months. Provision was also made for suspension of members pending investigation of charges, and expulsion upon conviction.

Joseph Kane, chauffeur for William Guggenheimer, presided at this meeting, and L. H. Warren acted as secretary. E. E. Hawley, driver for E. R. Thomas, was made chairman of a committee to report a plan of organization at another meeting a week following. The committee included also Fred Rankin, W. Van Vahn, Van Allen Soule and Samuel Brock. This committee was further instructed to confer with officers of the Automobile Club of America to secure its approval of the proposed organization and suggestions for its government.

That members of the Automobile Club of America and of the National Association of Automobile Manufacturers would welcome such an organization as the drivers now propose was shown in favorable discussions which came up at meetings of both these bodies last week. The annoyance caused by the action of some unscrupulous chauffeurs has shown the

owners and garage proprietors the value of an association of the drivers that will grade the men according to their relative value and exercise some control over them.

PREMIER TONNEAU TYPE CARS BUILDING IN INDIANAPOLIS.

Staff Correspondence.

INDIANAPOLIS, March 21.—The first gasoline tonneau type touring cars ever made for market in Indianapolis are now in process of manufacture by the Premier Motor Manufacturing Company, a company organized about the middle of last December with Harold O. Smith, formerly of the G & J Tire Co., as president and general manager, and George A. Weidely, also formerly with the G & J Tire Co., as treasurer and superintendent. It is a close corporation, the stock being held in not more than five families in Indianapolis.

Although so recently organized, and subsequently unfortunately delayed by a five-weeks' illness of Mr. Weidely, the company has already completed the first car of the model to be placed in the market, and is now putting through fifteen more, five of which are expected to be ready for delivery about May 1, and the remaining ten shortly after June 1. The company is working overtime and is pushing the work as rapidly as possible in temporary quarters at 222 to 228 West Maryland street.

The new automobile called the Premier is being constructed in only one model at present—a genuine French style tonneau car driven by a twin cylinder vertical motor in front, 5-inch bore by 6-inch stroke, with extra long pistons. The intake and exhaust valves are on opposite sides of the cylinder-heads and are mechanically operated and interchangeable. The crank case is a single large aluminum casting.

Transmission is through sliding gears with extra heavy teeth, and drive is direct by longitudinal shaft and bevel gearing on the differential.

The car embodies many advanced ideas in construction without incorporating freak ideas that have yet to be proven, the policy having been to adopt and to adapt methods and mechanical constructions that have been demonstrated to be good either as applied to automobile work or to the performance of similar functions in some other construction. Although the present model was designed before the holidays, it embraces many of the most advanced ideas shown by the most progressive foreign makers at the last Paris exhibition.

It is the purpose of the builders to produce a high class car adapted for touring over American roads, without making an especial effort to reduce the productive cost to a minimum, and to this end the essential parts are being made especially

strong and durable, special axles, knuckles and hubs having been designed as well as the motor and transmission system. The extra weight in such places is largely compensated by a liberal use of aluminum castings for casings, a light steel frame and reduction of weight in other directions where it will not affect the safety and durability of the car. The engine is designed to produce sufficient power to carry the vehicle wherever an automobile could reasonably be expected to go.

With a view to providing the maximum of comfort in riding, the Premier has been given an extra long wheel-base of 88 inches and fitted with 40-inch elliptic springs, 36-inch wheels and a tonneau body that has very little overhang at the rear and seats with reasonably high backs. At the same time the motive has been kept in view in designing the car to produce a pleasing form with harmonious lines.

ADDITIONS TO THE WINTON FACTORY NOW UNDER WAY.

Special Correspondence.

CLEVELAND, March 21.—The additions to the new Winton factory on Berea road are to be started at once, the grading for one of them having already been completed. Three immense new brick buildings the size of those built a year ago are to be erected, each about 300x70 feet and one-story high. This will make possible an early re-arrangement of the shops, making them more convenient and almost trebling the capacity, which will be upwards of twenty complete vehicles daily. The present shops, though in operation but a few months, are already crowded. The new cars are coming through rapidly, the assembling and finishing rooms being filled to their utmost capacity with vehicles almost ready to go into the hands of purchasers. The new additions, making six large main buildings, will make this the largest exclusive automobile plant in the Americas if not in the world. There is ample ground for this expansion, and the buildings, being only one-story in height, will be well lighted and ventilated, making an ideal plant.

George E. Woodruff Dies.

Special Correspondence.

AKRON, March 23.—George E. Woodruff, secretary of the Woodruff Automobile Co., died March 19, following an operation at the City Hospital for appendicitis. He was thirty-two years old. The death of Mr. Woodruff may indefinitely delay the plans of the Woodruff Automobile Co., which contemplated a reorganization of the company and the equipping of a large plant this spring. Mr. Woodruff was enthusiastic over the future of motor vehicles and was himself the inventor of certain improvements in gasoline engines.